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ETHER AS THE ANESTHETIC OF CHOICE IN PROLONGED OPERATIONS*

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When I first came into the field of medicine chloroform was used in New Orleans as the general anesthetic for all operations. Where for any reason we were afraid to give chloroform we had only local anesthesia to fall back on. We learned by experience that the patient had to be deeply anesthetized before the operation could be begun, otherwise not only would shock ensue but the patient would struggle, and this degree of anesthesia had to be continued until the operation was finished.

In 1905 I visited the larger medical centers in the country with the purpose of finding out, if possible, why it was that we in New Orleans were still using chloroform while in the North everybody was using ether. I found that they did not know how to give chloroform and we did not know how to give ether. I came back and showed the interns at Charity Hospital how to give ether as it was being done at the Mayo Clinic, and ether supplanted chloroform from that time on. We still felt that it was necessary to put a patient deeply under before beginning an operation and to keep him deeply under until the end of the operation, though we later found that the anesthesia might be stopped for five to ten minutes or more before the end of the operation without the patient struggling as in chloroform anesthesia. Nevertheless a patient who has had a prolonged ether anesthesia, of say two hours or more, reaches his room in a comatose state from which he does not recover for anywhere from two to six hours and when he does he will have nausea and vomiting for 24 hours or more and when he gets over his experience will vow never to take ether again as an anesthetic. The percentage of complications following such anesthesia is quite high.

On a certain occasion after I had removed the greater portion of the lower jaw as a sequestrum, walking back into the operating room after washing my hands I noticed a swelling under the chin which indicated that there was a pocket which required external drainage. The ether anesthetic had been stopped for some time so I had the attendants hold him firmly while I made a quick incision, expecting the patient to try to jump off the table, but he did not budge. I was greatly impressed with this fact but attached no particular importance to it until some years afterward when I had occasion to explore the right cerebral cortex, turning down an osteoplastic flap and opening the dura. I remember feeling that I wanted to be sure that this patient did not get too much anesthetic, so I instructed the anesthetist, who was giving drop ether on an open mask, to get the patient completely under surgically and then to stop the anesthetic until she heard further from me. I got busy with my operation and forgot all about the anesthetic and when I got through I found out that I had been working for over two hours and that the patient had received no more anes-

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thesia after once being deeply anesthetized. I began to feel then that there must be something different about ether, and now and then instructed the anesthetist to stop the anesthetic sometime before the end of the operation. More recently I have been making it a rule in operations that I expected to last for much more than an hour to have the anesthetic discontinued after giving it for 45 minutes or one hour. I found that we could work for at least another hour without difficulty. Still more recently I cut the period of anesthesia after the operation was started to 20 minutes and later again to 15 minutes, and I found that we could still continue to operate for an hour or more after the anesthetic had been stopped. I further found that we could continue to operate while the patient recovered consciousness to the extent of being able to converse with the operator or the assistants during the operation.

TECHNIC

The ether is administered on the open cone in the usual way, deep surgical anesthesia induced and maintained during the period of administration. In patients who object to ether, with or without their knowledge ethylene has been given till the patient becomes unconscious, then the ether started. The mask has in some instances been left on the patient's face, in others removed.

I am submitting a table of ten recent cases.

Patient 1 cried "That hurts" as the last skin suture was inserted.

Patient 3 began to move and anesthetist insisted on giving her five minutes additional anesthetic.

Patient 6 was similarly given ten minutes more after it had been stopped.

Patient 7, who had a large incisional hernia following cholecystectomy, began to gag just as the peritoneum was being closed. I became discouraged and felt we must resume the anesthesia for the remainder of the operation, when the anesthetist noticed that she had an airway down the patient's pharynx, removed it, and we finished the operation without further trouble. Here again was a new thing. The patient was sufficiently awake to gag because of pharyngeal irritation yet did not strain or in any way interfere with continuation of the operation.

Patient 8 began to move but was easily quieted by anesthetist talking to her reassuringly till the end of the operation. She said she heard all that went on.

Patient 9 conversed with the intern over the screen about a chicken dinner while a gastroenterostomy was being performed and did not seem to mind pulling on the transverse mesocolon, insertion of large sponges, or wiping depths of peritoneal cavity.

Patient 10 was also awake for about an hour, though she wailed and moaned a great deal without straining or interfering with the operation. She did complain that the last two or three sutures hurt.

TABLE I.

			Induction & preparation	Operation & anesthesia	Operation after stopping anesthetic
1.	Mrs. J. J.	Hysterectomy	20′	45′	1 hr. 15′
2.	Mrs. J. F.	Hysterectomy	15′	40′	1 hr. 50′
3.	Mrs. A. H.	Cholecystecomy	20′	45′ (a)	45′
4.	Mrs. J. F.	Nephrolithotomy	20′	45′	35′
5.	Mrs. R. P.	Hysterectomy	15′	45′	1 hr. 10′
6.	Miss L. D.	Hemicolectomy, right	10′	1 hr. 20′ (b)	2 hr. 45′
7.	T. P.	Incisional hernia	15′	1 hr.	50′
8.	Mrs. S. V.	Laparotomy	20′	20′	1 hr.
9.	H. R.	Gastroenterostomy	10′	20′	1 hr. 15′
10.	M. W.	Res. stomach and colon	20′	20′	2 hrs. 15′

(a) 5 minutes additional anesthesia.

(b) 10 minutes additional anesthesia.

DISCUSSION

Two facts definitely stand out as a result of this experience.

1. After a patient has been surgically anesthetized for a period of not less than 15 minutes, a major operation, including the most serious abdominal surgery, can continue to be performed over an additional period of one hour or more, the exact time probably depending on individual peculiarity, in one instance lasting two hours and fifteen minutes.

2. The analgesia produced by ether continues long after the patient is sufficiently conscious to carry on intelligent conversation.

SUMMARY

The following impressions have been gained therefrom:

1. These patients are either awake when they reach their rooms or waken shortly after.

2. They are not toxic and feel fine on awakening.

3. They have little or no nausea or vomiting.

4. There is little or no shock.

5. They have practically no postoperative complications.

6. Without discussing the relative merits of any other anesthetic, I believe this method of anesthesia should be the ideal one for operations expected to last one and one-half hours or more.

7. No complicated costly anesthesia machines are required.

8. It can be administered by the most poorly trained and least skilled anesthetist.

The last two points are of especial interest in war time, when limited transportation facilities and the lack of specially trained anesthetists must be faced.

Since it is generally admitted that ether is the safest of all general anesthetics, this experience would tend further to strengthen the opinion prevailing during the last World War, that ether is the best anesthetic for general use during war time.

How long must ether be given to produce this analgesia, or rather what is the shortest time? I have reduced it from one hour to 15 minutes. Perhaps it can be made less. In any event, there is still much room for experiment and research.

DISCUSSION

Dr. John Adriani (New Orleans): Dr. Danna's paper illustrates a property of ether we are inclined to overlook,—the analgesic effect. It is difficult initially during anesthesia to use the analgesic properties of ether. However, after anesthesia has been established and the administration stopped, the portion absorbed by the tissues maintains a concentration in the blood sufficient for analgesia.

The analgesia described by Dr. Danna is satisfactory, I think, in selected cases. I do not think that it is ideal in all cases. Certain types of operations require excessive manipulation. The analgesia will not necessarily eliminate contraction of the muscles and pushing. In operations where relaxation is essential in addition to pain relief, the analgesia may not be sufficient. However, there is a definite place for ether analgesia in surgery.

Dr. Rudolph Matas (New Orleans): I cannot let a paper so valuable and interesting as Dr. Danna's go by without at least a word of appreciation and comment. Despite the general decline of ether as a pure inhalation anesthetic comparison with the quicker and more advantageous gas mixtures of ethelyne, cyclopropane, and nitrous oxide-oxygen, it still remains the safest anesthetic in general practice, in extemporized emergency operating rooms, outside of well equipped hospitals, in rural, in military practice and other special circumstances in which unskilled anesthetists are not available.

Dr. Danna has directed our attention to a very valuable observation which is now generally overlooked but which was not unknown to the older anesthetists who began their experience with ether after the general abandonment of chloroform in the 80's of the last century,—virtually after nearly half a century of chloroform's undivided sway in the surgical practice of the Southern States. Before beginning the use of ether by the drop—open method, it was administered in closed or open masks and in saturating doses which left the patients unconscious and anesthetised long after the ether had been discontinued. Under these circumstances much of the minor work, as closure of the abdomen, was continued painlessly. This was particularly true when bronchorrhea and cyanosis caused alarms.

There is no doubt that this post-ether anesthesia was known in the heyday when ether was the exclusive anesthetic, but I doubt that the prolongation of the anesthesia was systematically or deliberately utilized by the operators of that time. There can be no doubt that the practice of administering preoperative sedation, especially the mor-

phia and scopolamin, morphia-atropine; sedation with the barbitals and intravenous anesthetics (amytal, evipan, pentothal) all of which prolong the anesthesia of ether, profoundly modify any conclusions based on the action of ether alone.

The special merit of Dr. Danna's contribution, as I see it, lies in his calling attention to the prolonged anesthetic action of ether after its administration has been suspended; and to the observations he has made on the duration of this period according to the nature and duration of the operation itself. As a result of these observations it would seem that despite the many variables that enter into the solution of the problem, there is an anesthetic effect seemingly inherent and peculiar to ether which permits the surgeon to continue the operation painlessly for a variable but useful period, i. e., after the ether has been completely discontinued. Dr. Danna's efforts to classify the cases and measure the duration of the etherless period are interesting and instructive since the operator, availing himself of this knowledge, may often accomplish his task without unnecessary toxic saturation.

Dr. J. E. Heard (Shreveport): I am sure that there is one point some of the surgeons would like Dr. Danna to comment on further and that is the question of straining, and abdominal rigidity in closure.

Dr. Joseph A. Danna (In closing): Dr. Adriani was present especially in that case in which the patient talked over the screen with the intern and he saw me dig down with a lap sponge into the bottom of the cavity while she was in conversation.

Now, it is nice to explain this on the fact that the tissues become saturated, and that the ether stays in the tissues any length of time and is eliminated slowly, but when the tissues become saturated the result is unconsciousness. Is it elimnated from one point, say the brain, faster than another? The fact that I am trying to bring out is that there is a differential effect of ether on consciousness and on pain sense, and that the effect on pain sense lasts for an hour or more longer than the effect on consciousness. That is something I never heard of before.

Now, somebody asked what the preoperative preparation was. My patients usually get 1/6 of morphine and 1/150 of atropine half an hour before the time set for operation and that is usually an hour before we make the incision. This hypodermic, therefore, is given an hour before starting work.

Now straining: If you operate on a large incisional hernia in the upper part of the abdomen, you know that if the patient really begins to strain the sutures will pull apart.

I had the impression, I think we got it from chloroform days, that if the patient was not completely under that you could not close the abdomen. But if your patient is saturated with ether for at least 15 minutes, I know now that an hour or an hour and a half later you can close the abdomen and the patient will not strain.

DIAGNOSIS AND TREATMENT OF SOME COMMON AILMENTS OF THE FEMALE URINARY TRACT*

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No attempt will be made in this paper to cover the whole urinary system in the female. Attention will be directed chiefly to conditions involving the bladder and urethra, which are met with every day by the general physician, and which in some ways are more or less peculiar to women.

The upper urinary tract cannot of course be divorced from the bladder and urethra. In many cases it will be necessary to make a complete survey of the kidneys and ureters, although the only symptoms are referable to the lower urinary tract. There are two conditions of the upper tract, which seem to be much more common in the female than in the male, and which I will mention briefly.

The first is ptosis of the kidney; the second is stricture of the ureter. Discussion of either of these subjects usually becomes heated, so I will merely mention them here and pass on. If either of these conditions is found during the course of an investigation of bladder or urethral sumptoms, it will have to be considered as a possible cause for these symptoms, and appropriate treatment given. Other upper urinary tract diseases, on the whole, present about the same picture in the male as in the female.

Bladder and urethral pathology though, differs considerably in the two sexes. This should not be surprising, as there are anatomic and physiologic differences also to be found here. I will now consider in some detail a few of the more common bladder and urethral diseases as seen in women.

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Some complaint about urination is almost as common in a female practice as fever is in a pediatric practice. The symptoms of frequency, burning, bearing down, straining, and "passing gravel," are heard over and over again. Let us see what are the commonest causes of these complaints, and what is the best treatment.

CYSTITIS

Acute cystitis is usually ushered in by the above mentioned chain of symptoms. There also may be some hematuria, and occasionally this may be sufficient to be quite alarming. The diagnosis of acute cystitis is usually quite easy, except when accompanied by hematuria, as above mentioned. The catheterized urine always contains a rather large amount of pus. If blood is also present, it usually rapidly diminishes in amount after the first few painful voidings, which initiate the attack. It is helpful in treatment if the causative organism can be identified by smear or culture. The treatment of acute cystitis is much easier, and results are much quicker now than formerly. Sulfathiazole by mouth, two tablets three or four times a day, is effective in practically all cases, except those due to organisms of the enterococcus group. This group, in the experience of some urologists, and in my own, is seen with considerable frequency. Sulfathiazole has proved practically worthless in cases due to this organism, but mandelic acid is quite effective. Hence, the advisability of finding out with what organism one is dealing. Acute gonorrhea is sometimes ushered in with symptoms similar to those mentioned above, and must be kept in mind, but it will not likely be overlooked if one catheterizes the patient, when he will notice the acute discharge, and will then make a smear.

Other measures besides chemotherapy, which are useful in treatment, are hot sitz baths, and sedatives at home, and bladder irrigations at the office, using warm, mild antiseptic solutions, usually weak potash or boric acid. The acute cystitis case usually clears up in a week or two under these measures. If it fails to do so, a complete investigation of the entire urinary system should be made. The same thorough study should be made if these acute episodes begin to recur at intervals. In addition to the urinary tract, a thorough physical examination is also necessary. The underlying cause of the recurrences may be found in the cervix, Skene's or Bartholin's glands, the uterine adnexa, the teeth, tonsils, and sinuses, the gastrointestinal tract, or elsewhere. A focus of infection in the cervix, and abscessed teeth, have most frequently been found the cause in my experience, when the urinary tract itself has been found to be free of discoverable lesions. Chronic cystitis may be an aftermath of an acute attack, or there may not have been any acute phase. The symptoms are the same, only less severe. If an actual cystitis exists, there is pus and perhaps red blood cells in the urine. Complete investigation is necessary, and may uncover various lesions of the kidneys and ureters, as well as lesions of the bladder, such as stone, neoplasm, diverticulum, foreign body, tuberculosis, non-specific ulcers, Hunner ulcer, neurogenic bladder, and neoplasm of the pelvic organs. These conditions, of course, all call for appropriate treatment.

INVOLVEMENT OF URETHRA

Urethritis in the female had almost escaped attention in text books and current literature up until the last few years. Folsom of Dallas, Texas, has done much to call the attention of the profession to the female urethra. Affections of the urethra cause about the same symptoms as those of cystitis, but the urethra does not respond to the treatment used for cystitis. It is for this reason that the attention of the profession should be more frequently directed toward the female urethra. Acute urethritis is usually, but not always due to the gonococcus. The symptoms are chiefly frequency and burning on urination. Examination may reveal some discharge, and some swelling. Treatment should be very conservative, chiefly chemotherapy, with little or no local treatment. Chronic urethritis is a cystitis, without cystitis. The symptoms are all there, but when the urine is examined, it may be almost or quite negative. The pa-

tient is then in great danger of being labeled a neurotic, when she really has some very definite pathology in the urethra. Stricture of the female urethra is much more common, in my estimation, than is usually thought. Often the entire train of symptoms of frequency, burning, urgency, and bearing down, can be alleviated, and cured by simple dilatation of the urethra.

The external meatus is most often the site of stricture, and should be gradually dilated just like a stricture of the male urethra. Occasionally a meatotomy may be necessary, where there has been extensive scarring from previous inflammation or trauma. Even in the absence of definite stricture, thorough dilatation is useful in clearing up a chronic inflammation. The urethra should be inspected, which is best done through a straight endoscope. A normal mucosa has an even and smooth reddish color, while the mucosa of a chronic urethritis resembles the mucosa of the throat with a pharyngitis. The red color is more intense, and there are apt to be whitish or grayish spots and streaks. In order satisfactorily to examine the urethra, the bladder should first be emptied. The endoscope is then passed beyond the internal sphincter, and gradually withdrawn. A long aspirator should be at hand to aspirate any urine running down in the field of vision, and long dry applicators are then introduced, thus giving a very clean and satisfactory view. The treatment of choice is the topical application of 2 to 10 per cent silver nitrate, being very sure there is not an excess of the solution on the applicator. Use of this treatment once a week is very satisfactory. A soothing instillation of neosilvol or gomenol is well made before each treatment is concluded. Other conditions likely to be partly responsible for the symptoms are an infected cervix, chronic skenitis, and a vaginitis, due either to monilia or *Trichomas vaginalis*. This latter organism, I am quite sure, is often the cause of much urinary distress, and should be looked for in every such patient. If Skene's glands are thickened, they should be destroyed by fulguration, with a needle electrode.

An infected cervix should be treated by linear cautery, conization, or other means.

If these conditions are all kept in mind, and properly recognized and treated, there will remain very few female patients whom you will label as having neurotic or unspecified irritable bladders.

CONCLUSIONS

1. Urethritis is very often overlooked.
2. Cystitis and urethritis are very common in the female.
3. Their recognition is not difficult, and proper treatment is very satisfactory.

DISCUSSION

Dr. Robert F. Sharp (New Orleans): Dr. Hargrove has covered this important subject in a thorough and practical manner. I am limiting my remarks to certain types of those cases Dr. Hargrove referred to as "cystitis without a cystitis." By this is meant symptoms of cystitis without positive urinary findings. This group is composed of a large number of conditions clearly recognized as a clinical entity, while others are not so definite. The pathologic process may be either within or outside of the urinary tract.

Hunter's ulcer, interstitial cystitis and neurologic bladders present some of the most trying problems with which the urologist has to contend. The bladder neck obstructions, urethral strictures and chronic urethritis with their hyperplastic and polypoid changes, respond satisfactorily to proper management. Urethral caruncle may be either symptomatic or asymptomatic. McKim has recently reported a series of 202 cases of urethral caruncle on which he has operated. He brings out that ordinary inspection of the urinary meatus is not sufficient to rule out the presence of a caruncle. He inserts an applicator wrapped with cotton into the urethra and on withdrawing it, brings into view some caruncles that would not otherwise be visible. The operative technic that he describes is unique. His article will be published in the near future.

I now want to comment on a group of cases which are by no means uncommon. I refer to the post-menopausal women who are always complaining of pains in the bladder or vagina, frequency, urgency and dysuria and even incontinence. Examination reveals atrophic changes of the vulvae and meatus, indicative of estrogenic deficiency. Urethroscopic findings are a rather thin mucous membrane, somewhat reddened, which tends to bleed readily on dilatation. This type of case does not respond satisfactorily to the usual methods, that is dilatation and application of silver nitrate. This addition of estrogenic therapy has proved beneficial in a large majority of the cases. Salmon, et al., reported the use of estrogenic

therapy alone in the treatment of a series of 16 such cases with complete relief of 13 by the fourth week. There was a tendency for the symptoms to recur after the treatment had been discontinued for varying periods of time.

The next group is one in which no local lesion in the urinary tract exists to explain the symptoms, or if such a lesion does exist, it is not in proportion to the symptoms. This group is by no means limited to the female. In the male this group makes up a good percentage of those suffering from impotence. Their syndrome is usually explained by the term "low pain index" or "neurotics." It is my opinion that in many instances we are too quick to label these patients with the above terms. Experience has led me to believe that in some instances a toxic condition exists resulting in a neuralgia, or what may be termed rheumatic disease, in this area just as you may have pain in other parts of the body without any demonstrable lesions. At any rate, they do not respond well to local treatment. Removal of focal infections, correction of dietary discrepancies, proper exercise and some form of mental diversion have been the most effective measures undertaken in my experience.

Dr. M. H. Foster (Alexandria): In order to avoid another presentation of the usual discussion about nephropexy, I am going to refer briefly to three other conditions: First, skenitis; more than a dozen years ago this subject was presented in an exceptional paper by Dr. Stevens of San Francisco, at the A. M. A. meeting, over in the Hutchinson Memorial on Canal Street, and ever since then I have been diligently searching out infections of these glands.

Secondly, urinary infections, which are divided into three general groups, quite important from the standpoint of application of therapy; those groups of infections which do not contain organisms splitting urea and the other group of organisms which do split urea with formation of ammonium. It is often possible to demonstrate urea-splitting organisms by dinnertime in media planted at breakfast.

Third, neoplasms of the bladder. While not frequent, neoplasms of the bladder occur. I had a conversation with Colonel Ashe of Washington recently and he said that the ratio of neoplasms of the kidney is 9:1. In the presence of neoplasms which are annoying and not more than 1 cm., they may be attacked by high frequency current through the urethra. I have followed one in Alexandria and a week ago I found two small lesions and cut them out with one rush of the resection loop. Those malignant lesions more than 1 cm. across the base are often found infiltrating the bladder wall and occasionally invading the perineum. These lesions should never be attached by the transurethral method but require surgical section.

ABDOMINO-THORACIC GUNSHOT INJURIES*

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During the past year, while engaged in a study of 478 cases of abdominal gunshot injuries admitted to the New Orleans Charity Hospital, I was especially impressed by the large number of victims simultaneously suffering injury to the chest cavity and its contents. The frequency of this complicating injury, and the fact that 228 patients, or nearly 48 per cent of the entire series, showed evidence of injury to both abdominal and thoracic cavities, stimulated the writer to make a survey of this particular group. According to Harrington[1] "there are fundamental differences between the physiology and dynamics of the thoracic cavity and those of the abdominal cavity which makes a marked difference in the immediate as well as the subsequent treatment of wounds involving the two cavities." Thus, the clinical picture of an open pneumothorax, or a tension pneumothorax—with possible injury to some other important thoracic structure complicating an already very dangerous abdominal wound—makes this type of case a relatively more serious problem than the type in which either the chest only, or the abdominal cavity alone is involved. The seriousness of this type of case is amply borne out by the mortality figure of 62.28 per cent in the group of abdomino-thoracic cases herein considered as compared to the mortality rate of 48 per cent among the 250 cases comprising the abdomino-pelvic group in this series.

TABLE 1
INCIDENCE—Race and Sex
Abdomino-thoracic Group

Race and Sex	Total	Lived	Died	Mortality Per cent
White Males	63	24	39	61.90
Negro Males	116	42	74	63.79
White Females	19	9	10	52.63
Negro Females	30	11	19	63.33
Totals	228	86	142	62.28

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Penetrating abdomino-thoracic wounds have been classified by Edwards[2] into: (1) those in which the chest and abdomen are penetrated by separate missiles; (2) those cases in which a single missile penetrates the chest and enters the abdominal cavity or, penetrating the abdomen, enters the thoracic cavity; (3) cases in which a penetrating wound of the lower chest has been inflicted during expiration and thereby entering the pleural cavity passes through the diaphragm to involve the abdomen, and (4) those cases in which a "tangential" wound of the lower chest, caused by the missile or "indriven fractured ribs" might "produce considerable laceration of the diaphragm." The pictures given by this classification are virtually the same as those observed among the 228 cases herein considered, except that in none was a "tangential" wound described. Many in this group of abdomino-thoracic wounds were the victims of bullets entering both cavities. A large number were injured by the penetration of only one missile involving both cavities. In addition there was a fairly large group which not only received abdomino-thoracic injuries but received wounds in other regions, such as the head and extremities, as well.

During 1918, according to Gordon-Taylor,[3] abdomino-thoracic injuries constituted 9 per cent of a certain series of thoracic cases admitted to a "clearing station." The incidence of abdomino-thoracic cases, reported by Wallace[4] from World War I, constituted 12 per cent of all abdominal wounds reaching the casualty hospitals. Jolly,[5] reporting from the recent Spanish Civil War, gives 11 per cent as the incidence of abdomino-thoracic wounds among all abdominal wounds admitted to a "hospital of first urgency." Storck,[6] in a series of 46 cases of penetrating (gunshot and stab) wounds of the abdomen, found that 11 patients, or 23.9 per cent, showed associated chest injuries. The 228 cases of abdomino-thoracic gunshot injuries among 478 cases of abdominal gunshot wounds studied in this series, gives an incidence of 47.6 per cent, which is considerably greater than the figures given in the afore-mentioned reports. However, the circumstances under which these wounds were inflicted are those which obtain in civil life, circumstances during which the assailant usually aims in the direction of the chest which he knows contains vital structures.

ANATOMIC CONSIDERATIONS

In order to get a proper appreciation of abdomino-thoracic gunshot injuries it is necessary to have a clear understanding of the topographic as well as the cross-section anatomy involved. In this respect one must consider the abdominal cavity as projecting itself upward into the thoracic cavity and downward into the pelvic cavity. Accordingly, it might be said that the upper limit of the abdominal cavity is flanked on each side by the lower limits of the thoracic cavity, which because of the dome-shaped diaphragm permits the chest to overlap and partially cover the upper limit of the abdomen. The upper limit of the abdominal cavity reaches the level of the upper border of the fifth rib anteriorly on the right side and the fifth intercostal space anteriorly on the left side. The lower limits of the pleura are usually the lower border of the ninth rib in the midaxillary line and the twelfth rib posteriorly. The diaphragm extends even lower in these regions. Anteriorly, in the midline, the diaphragm is at its highest point peripherally just behind the xiphoid process. From this point the periphery of the diaphragm gradually passes to a lower level as it follows the lower border of the ribs.

A cross-section of the body, passing through the ninth intervertebral disc, which goes through the lower third of the heart, cuts through the upper limit of the diaphragm. This will be recognized as being rather high up in the thoracic cavity since the section goes through large areas of both lungs. A section passing through the tenth intervertebral disc shows both pleural cavities, both lungs, the liver, the spleen, the stomach, and the lower limit of the pericardial cavity. A perforating missile entering the body on the right side between the sixth and seventh ribs in the midaxillary line and traversing to the opposite side on a line perpendicular to the midline of the body

would enter the right pleural cavity, pass through the right lung, the right diaphragm, the liver, the stomach, perhaps the spleen, the left diaphragm, the left pleural cavity and out through the left chest wall. When one considers other possible routes from the same point the possibilities multiply many times. A transverse section through the twelfth thoracic vertebra near the twelfth disc still shows the costophrenic sulcus on each side as well as the diaphragm. In addition one also sees the liver, the stomach, the lesser peritoneal sac, the pancreas, the spleen, both kidneys, both adrenal glands, the splenic flexure and the jejunum. Thus, in considering penetrating wounds of the trunk passing within the limits of parallel transverse sections, between the ninth intervertebral disc and the twelfth thoracic vertebra, one can easily understand why such injuries are very likely to involve both thoracic and abdominal cavities and their contents.

STATISTICAL ANALYSIS

The homicidal activities of the negro in New Orleans are particularly responsible, according to many observers, for this city's "unenviable superiority in homicidal gunshot wounds." Thus, true to the traditions of the past, this group of abdomino-thoracic gunshot injuries shows practically no variation when considering the race of the victims. A thorough study of the histories in this series likewise showed that the most common assailant, as well as the victim, is the negro male. Accordingly, it was found that the negro males contributed 116 victims, or 50.8 per cent, of the entire group. The white male victims, numbering 63 and representng 27.6 per cent of the series, was a poor second, although not by any means insignificant nor inconspicuous. Among the females the negro women with 30 victims comprised 13.1 per cent of the entire series; whereas, the white women with 19 cases represented 8.3 per cent of the total number of abdomino-thoracic gunshot wounds studied.

The prognosis in gunshot injuries involving the chest or abdomen is obviously very ominous. When it is considered that in a given case not only might either one of these cavities be involved but that both actually are invaded, the outlook is proportionately more serious. Hence, Edwards[7] observes that "abdomino-thoracic wounds are usually associated with a high mortality." Gordon-Taylor[3] gives the recovery rate of abdomino-thoracic wounds in 1916 as about 18 per cent. This writer[3] likewise quotes a recovery rate of 44.5 per cent in a series operated upon during the first World War. He adds, however, that "some series of abdomino-thoracic cases in the casualty clearing zone gave a more favorable recovery rate than this", further stating that some operators "saved as many as 79 or 80 per cent of their patients." As already given, the mortality rate among the group studied by the writer is 62.28 per cent. This rate varied relatively little when the race and sex of the group was considered. Hence, the negro males with 74 deaths gave a mortality rate of 63.79 per cent; the negro females with 19 deaths, a rate of 63.33 per cent. The white males with 39 deaths, a death rate of 61.90 per cent; while the white female group showing 10 deaths, gave the lowest mortality rate with the figure of 52.63 per cent. As previously indicated, the figure of 62.28 per cent for the abdomino-thoracic group, when compared to a mortality rate of 47.6 per cent among the abdomino-pelvic group, in this series of 478 cases, shows a difference, sufficiently appreciable, to allow for interesting speculation.

STRUCTURES INJURED

Penetrating abdomino-thoracic gunshot injuries are not unlike other abdominal gunshot wounds in the multiplicity of organs and other structures involved. In those cases with one bullet wound the diaphragm is necessarily always injured; whereas, cases showing separate chest and abdominal wounds frequently show no evidence of injury to this structure. Among the writers reporting large series of abdominal gunshot wounds, Loria,[8] Oberhelman and Le Count,[9] Lockwood,[10] Storck,[6] Rippey,[11] Gordon-Taylor,[12] and others have discussed, rather at length, visceral and other structural injuries encountered. Ab-

domino-thoracic injuries, because of the additional possibility of involving the various thoracic structures, and because of the possibility of such serious complications as open pneumothorax, tension pneumothorax, hemothorax, and hemopneumothorax constitute a relatively more serious group.

In the present series among the thoracic structures injured the heart was designated as having been wounded in three cases, each ending fatally. Two patients with injury to the pulmonary vessels likewise died. The right lung was named in 14 cases with 13 fatalities, and the left lung in 27 cases with 23 deaths. The diaphragm was named in 77 cases among which 68 died; and there were two spinal cord injuries, each succumbing. In addition to these structures the accompanying table designates the number of cases receiving injury to the viscus or structure named.

TABLE 2

STRUCTURES INJURED

Abdomino-thoracic Group

	Total	Died	Lived	Mortality
Liver	130	40	90	69.23
Spleen	20	5	15	75.00
Right kidney	22	3	19	86.36
Left kidney	23	3	20	86.95
Pancreas	9	2	7	77.77
Gallbladder	5	0	5	100.00
Stomach	69	13	56	81.17
Duodenum	9	0	9	100.00
Small intestine	67	11	56	83.58
Large intestine	55	6	49	89.09
Aorta	1	0	1	100.00
Celiac artery and branches	3	1	2	66.66
Heart	3	0	3	100.00
Pulmonary vessels	2	0	2	100.00
Right lung	14	1	13	92.85
Left lung	27	4	23	85.18
Diaphragm	77	9	68	88.31
Spinal cord	2	0	2	100.00
Mesenteric vessels	33	6	27	81.81
Omentum	4	0	4	100.00
Urinary bladder	1	0	1	100.00
Iliac vessels	3	0	3	100.00
Ovary	1	0	1	100.00
Vagina	1	0	1	100.00
Unknown	13	8	5	38.46

Of much interest as regards this series is the fact that the liver was named as injured in 130, or more than one half of the cases. The kidneys were named in 45 cases, the spleen in 20, the pancreas in nine, the gallbladder in five, the stomach in 69, and the duodenum in nine cases. These are of particular interest because of their proximity to the thoracic cavity and because of the frightfully high mortality accompanying injury to these structures. Additional viscera and other structures designated as injured in this group of 228 cases of abdomino-thoracic gunshot injuries were the small and large intestines, the aorta, the celiac artery and its branches, the mesenteric vessels, the great omentum; and in the pelvis, the bladder, iliac vessels, ovary and vagina. Failure to record the viscera and other structures injured occurred in 13 cases of the entire series. It was noted that the greater the number of viscera and other structures injured in any given case the more likely was the victim to die.

COMPLICATIONS

In abdomino-thoracic gunshot wounds the usual complications found in abdominal injuries are supplemented by such conditions as hemothorax, hemopneumothorax, open pneumothorax and tension pneumothorax, each of which if not recognized and treated early will play an important part in determining a fatal issue. Among the strictly chest complications, in this series, hemothorax was diagnosed in 44 cases, hemopneumothorax in 10 cases, and suction pneumothorax and open pneumothorax in one case each. In a considerable number of these cases the records would seem to indicate that the diagnosis of these four complicating conditions was very possibly overlooked. Additional chest complications named in this series were pneumonia in 21 cases, gangrene of lung, collapsed lung, strangulated diaphragmatic hernia, coronary thrombosis, hemopericardium, pericarditis, and gangrene of the abdominal and chest walls, all one case each. Other complications were those not infrequently observed in abdominal gunshot injuries and are listed in the accompanying table.

An interesting yet not unusual observation in the study of the complications named in this series of abdomino-thoracic gunshot injuries was the fact that many of the fatal cases especially showed more than one complicating condition.

TABLE 3
COMPLICATIONS
Abdomino-thoracic Group

Complications	Total	Lived	Died	Mortality Per Cent
Peritonitis and septicemia	57	9	48	84.21
Hemothorax	44	15	29	65.91
Hemopneumothorax	10	4	6	60.00
Pneumonia	21	4	17	80.95
Gangrene of lung	1	0	1	100.00
Mesenteric thrombosis	1	0	1	100.00
Gangrene transverse colon	1	0	1	100.00
Pyelonephritis	2	1	1	50.00
General septicemia	3	0	3	100.00
Empyema	2	2	0	00.00
Thrombophlebitis	1	1	0	00.00
Collapsed lung	1	1	0	00.00
Subphrenic abscess	2	1	1	50.00
Fecal fistula	2	1	1	50.00
Chemical peritonitis (bile and pancreatic)	1	0	1	100.00
Cystitis	2	1	1	50.00
Strangulation diaphragmatic hernia	1	0	1	100.00
Coronary thrombosis	1	0	1	100.00
Pericarditis	1	0	1	100.00
Hemopericardium	1	0	1	100.00
Suction pneumothorax	1	0	1	100.00
Infected incision	6	6	0	00.00
Gas gangrene (left leg)	1	1	0	00.00
Gas gangrene abdominal and chest walls	1	1	0	00.00
Liver abscess	1	0	1	100.00
Tetanus	1	1	0	00.00
Decubitus ulcers	1	1	0	00.00
Open pneumothorax	1	0	1	100.00
Spinal cord injury	2	0	2	100.00
Evisceration	1	0	1	100.00

CAUSES OF DEATH

Aside from one case of gangrene of the left lung, one case of coronary thrombosis and 13 cases of pneumonia, the causes of death as given in this series are conspicuous by an absence of those conditions commonly associated with a fatal termination in chest injuries. Hence, hemothorax, which according to the list of complications was named among 29 of the fatal cases; hemopneumothorax, named in six of the patients dying; strangulated diaphragmatic hernia, pericarditis, hemopericardium, suction pneumothorax, and open pneumothorax, each designated once among the fatal cases, as well as two fatal spinal cord injury cases, were all omitted from the list of causes of death collected in this series. An analysis of these causes of death presents a picture very analogous to the causes of death observed in abdominal gunshot injuries in general with "hemorrhage and shock" and "general peritonitis and septicemia" accounting for the great majority of the fatalities. The causes of death as given in this group of cases are shown in the following table.

TABLE 4
CAUSES OF DEATH
Abdomino-thoracic group

Causes of Death	Cases	Incidence Per cent
Hemorrhage and shock	97	68.40
General peritonitis and septicemia	43	30.28
Spinal cord injury	2	1.48
Gangrene of lung	1	.70
Bronchopneumonia	13	9.15
Pyelonephritis	1	.70
Mesenteric thrombosis	1	.70
Gangrene transverse colon	1	.70
Chemical peritonitis (bile and pancreatic)	1	.70
Coronary thrombosis	1	.70

TREATMENT

A study of the treatment in this group of cases shows that in addition to the usual forms of therapy, such as infusions and transfusions, 159 patients were subjected to exploratory celiotomy with 92 deaths, or a mortality of 57.86 per cent. Among the 69 patients not operated upon there were 50 fatalities, giving a mortality rate of 72.46 per cent. In the entire series chest procedures were designated as having been done in three cases. One of these cases was subjected to the aspiration of blood with air replacement; the second was subjected to a thoracotomy for empyema; and the third had his chest strapped.

The failure to use the sulfonamides more frequently in these cases is no doubt partly explained by the fact that many of these patients were treated during the period before these drugs enjoyed their present popularity. Accordingly, prontosil was used in two patients with recovery, sulfanilamide was used in five cases with one death, neoprontosil in one patient who died, sulfapyridine in one case which recovered and sulfathiazole in four cases with no deaths. One patient was treated with both sulfanilamide and sulfathiazole. In none of these abdomino-thoracic cases was a sulfonamide drug designated as having been placed in the peritoneal or thoracic cavity. Use of these drugs in this manner, as already practiced by Rippey,[11] will very probably improve the mortality figures.

TABLE 5
OPERATED AND NON-OPERATED CASES
Abdomino-thoracic group

	Total	Lived	Died	Mortality Per Cent
Chest operations	0	0	0	00.00
Abdominal operations	159	67	92	57.86
No operation	69	19	50	72.46

SUMMARY

In making a study of 478 cases of abdominal gunshot injuries, treated at the New Orleans Charity Hospital, and which will be reported later, the writer was impressed by the large number which concomitantly showed evidence of injury to the thoracic cavity and its contents. A study of this group of 228 cases of abdomino-thoracic injuries reveals that the mortality among them was greater than in the remaining group of 250 abdomino-pelvic cases. The increased gravity of these cases is appreciated more fully when one considers that in addition to the usual intra-abdominal traumatic lesions in abdominal injuries the surgeon is not infrequently confronted with such ominous conditions as hemothorax, hemopneumothorax, and open and tension pneumothoraces. It is my opinion that more of the fatal cases in this series died of chest complications than the records indicate.

A brief review of the topographic and cross-section anatomy between the ninth intervertebral disc and the lower level of the twelfth thoracic vertebra rather impressively shows why so many gunshot injuries in this region are likely to involve both abdominal and chest cavities and their contents. In addition the likelihood of greater hemorrhage from injuries to structures up under the diaphragm adds to the gravity of these cases.

The seriousness of injury to the various abdominal and thoracic structures involved is amply brought out by the respective mortality rates. The liver particularly and the kidneys, stomach, spleen, lungs and diaphragm, all show frequent involvement in these injuries; and, the pancreas and duodenum must always be kept in mind.

The complications observed among these cases are numerous and varied. Not infrequently more than one of these complications added to the gravity of the case at hand. A few of these complications, as peritonitis, hemothorax, and pneumonia were of relatively frequent occurrence. A large number were observed very infrequently, usually not more than once each in the entire series.

The causes of death, as given in this series, are characterized by the frequency of "hemorrhage and shock" and "general peritonitis and septicemia." Although pneumonia accounts for a fair number of fatalities the other causes are infrequent; and, the entire group is interesting because of the absence of several chest complications frequently causing death in chest injuries.

The management of these cases shows an operative mortality of 57.86 per cent as against a non-operative mortality of 72.46 per cent. All operations were exploratory celiotomies. Aside from one thoracotomy for empyema no chest operation was performed. Only six patients in the entire series were treated additionally with one of the sulfonamide drugs.

CONCLUSIONS

1. A series of 228 abdomino-thoracic gunshot injuries occurring among 478 cases of abdominal gunshot wounds, has been studied and found to reveal a number of interesting facts.

2. The anatomy involved is very important, and a review of the main features is given in order to show the true anatomic picture of the structures involved in abdomino-thoracic gunshot injuries.

3. I agree with Edwards' classification of these cases and feel that despite the fact that many have injuries to the chest and abdomen, caused by separate missiles, nevertheless, whether caused by one missile or more than one missile the problem is the same—a simultaneous involvement of two important and adjacent cavities "the physiology and dynamics" of which are fundamentally different. I further feel that the nomenclature "abdomino-thoracic" is proper and very adequately fits these cases.

4. If the records studied represent a criterion to these cases in civil life elsewhere it would appear that all too frequently the surgeon pays too little attention to the thoracic phase of these injuries.

5. Although the incidence of abdominothoracic injuries is large in this series, the fact that they occurred in civil practice to a great degree explains an assailant's attempt to have his missile strike the vulnerable thoracic region. In addition during warfare the assailant is usually at a much greater distance from his victim.

6. It is very likely that many abdominothoracic injury victims in warfare die on the field of battle, the usually larger and more damaging missile accounting for an open pneumothorax that is no doubt fatal within a short time, as compared to the smaller missiles of civil life the entrance and exit points of which very probably frequently close sufficiently to avoid the ill effects of a suction pneumothorax.

7. The present series of abdominothoracic gunshot injuries has been found to show a mortality rate very appreciably different and greater than the abdominopelvic group with which it is compared.

8. The possible complications of hemothorax, hemopneumothorax, open pneumothorax, and tension pneumothorax add to the dangers already present through the presence of an abdominal lesion.

9. Although other viscera showed frequent involvement, injuries to the liver, kidneys, stomach, spleen and lungs were of relatively more frequent occurrence.

10. The commonest causes of death in this series are not unlike those observed in abdominal injuries. Causes of death frequently observed in chest injuries are conspicuous by the small number reported.

11. Although the operated cases show a frightfully high mortality, the non-operated cases, many of which were moribund on admission, show even a greater mortality rate.

12. The six cases given a sulfonamide drug in this series showed one death. Routine use of chemotherapy, in abdominal and thoracic cavity wounds, will probably show an improvement in the mortality rate of these cases.

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DISCUSSION

Dr. Rudolph Matas (New Orleans): I believe this is the best contribution to the special field of the abdomino-thoracic gunshot wounds that the experience of the Charity Hospital has yet yielded on this particular subject, thanks to Dr. Loria's industrious research and able study.

That this is no small compliment or insignificant statement is realized when we consider that the experience of the Charity Hospital in these traumatisms is greater in wealth of material than that of any other civilian hospital of the same size and age in the United States and probably in the world.

As in all State hospitals in the "black belt of the South"—only on a larger scale,—the negro is largely responsible for our unenviable regional fame for unsurpassed experience in homicidal trauma,—a reputation which we trust will, in time, become purely historical.

Since the year of its foundation (1832) the Hospital has furnished clinical and pathological material for numerous and distinguished studies in this field by its staff, but little was done in the way of statistical compilations and collective reports until the surgical treatment of penetrating abdominal wounds was inaugurated by Dr. A. B. Miles on March 8, 1891.

In further confirmation of the supremacy of Charity Hospital as the source and repository of gunshot wounds of the abdomen in peace time, I would recall that in 1901, I compared the statistics of the Charity Hospital on gunshot wounds of the abdomen with those of other general hospitals, in Montreal, Boston, New York, Philadelphia, Cin-

cinnati, St. Louis for the same period, and found that the admissions at Charity Hospital during the decennium 1890-1900, alone, (234 cases) exceeded the combined experience of the seven other hospitals (205 cases). The greater relative incidence of these wounds at the Charity Hospital was exhibited in my report for 1905-1926, as chairman of the special committee appointed by the staff,—of which Dr. Loria, acting as secretary, compiled the admissions for gunshot wounds of the abdomen from 1890-1925,—35 years. These cases summed up a total of 1,175 gunshot wounds of the abdomen treated in the Hospital during that period, with an average annual mortality of 60.5 per cent. In the interval between 1904-1928,—24 years, the admission for gunshot wounds in general amounted to 6,075 patients with 1284 deaths,—60 per cent negroes. It is not surprising that Col. Lagarde jokingly suggested that the students of the Army Medical School should come to the Charity Hospital for part of their military training.

In this paper, Dr. Loria has assembled all the gunshot wounds of the abdomen admitted to the Hospital from January 1, 1927 to January 1, 1942, in all 478 patients suffering from gunshot wounds of the abdomen admitted in 15 years. Of these, he has detached 228 or 48 per cent, in whom penetration of both cavities simultaneously by one or more missiles had been clearly demonstrated clinically or by autopsy. While the large incidence of these bi-cavital injuries is surprising in comparison with other military and civilian statistics, we must accept this proportion as correct since it is based on exact anatomical and clinical data, recorded by the author in each case. Besides, the thoracic signs are frequently overshadowed and overlooked in the tempest of the secondary abdominal complications. It is also not uncommon that certificates of death only account for the dominant abdominal wounds without mention of a less obtrusive thoracic injury, which, none the less, is revealed on attentive revision of the clinical history.

When we realize how much of the abdomen (under the diaphragm) is embodied or telescoped into the thoracic cage, we wonder how a dual (thoraco-abdominal) injury is avoided when bullets or projectiles penetrate the chest transversely or antero-posteriorly within the limits of the broad belt (defined by the author) that extends posteriorly from the 9th intervertebral cartilage to the lower border of the 12th rib; laterally from the 5th rib to the 12th and, antero-laterally, by the xiphoid cartilage, the costal arches and epigastrium.

Judging by the listed causes of death in the thoraco-abdominal group, it would seem that if the patient can survive the primary hemorrhage and shock, whether thoracic or abdominal (which accounts for 68.40 per cent of the deaths), that the secondary perils that follow are preponderatingly abdominal (peritonitis, ileus and septicemia) rather than thoracic (hemo- and pneumothorax, bronchopneumonia, empyema, projectiles in heart and pericardium, and so on).

There are many phases of abdominal and thoracic anatomy and surgery peculiar to the thoraco-abdominal group that Dr. Loria has developed in his study. Notably among these are the cadaveric cross sections of the body at various levels which exhibit the areas and organs along the trajectory of a projectile traversing the chest either transversely or antero-posteriorly; penetrating and perforating wounds at these levels being most frequently responsible for the bi-cavital injuries.

Even more important are the statistical studies on the relative frequency and gravity of injury to the individual organs of the abdomen and thorax, in shaping the prognosis.

In regard to the general prognosis, it is made clear, as would be expected, that invasion of both cavities simultaneously adds very seriously to the collective mortality of the group; thus, the mortality of the dual group is 62.28 per cent while that of the abdominal cavity alone is 47.6 per cent and that of the chest alone, 34.8 per cent. Race and sex appear to have very little effect on the mortality. The death rate of the negro males who constitute 50.8 per cent of the series, was 63.79 per cent, while the white male mortality from the same cause was 61.90 per cent.

It would seem from Dr. Loria's figures that in dealing with these dual lesions it is the abdominal wounds and their complications that make the greatest demands on surgery while the thoracic pathology, grave as it is, is secondary and relatively unimportant from the surgeon's viewpoint. In this series there was no surgery of the chest apart from aspirations and thoracotomies for empyema. It is, none the less, apparent that more of the fatal cases in this series died of chest complications than the records indicate. The records do show that in addition to the usual forms of therapy for shock and hemorrhage, such as infusions and transfusions, exploratory celiotomies were performed on 159 patients, with 92 deaths, or a mortality of 59.86 per cent. Of the 69 not operated, 50 died, or a mortality of 72.46 per cent.

Coming now to the inevitable and critical question: What have we learned by this exceptionally large experience that will help to reduce the frightful mortality of these wounds? Confining ourselves to the surgical treatment we find that in the course of fifteen years (1927-42) since this compilation was started, great improvements have been made not only in the surgical technics of abdominal operations but in the pre- and post-operative care given to these patients; improve-

ments, which have undoubtedly added vastly to their comfort and to the betterment of their ultimate fate. None the less, the general average mortality of the abdominal gunshot wounds still remains very much as it was fifteen years ago. That is, the gross mortality (as shown by our continuous statistical tables since 1890) has been fluctuating more or less above and below 50 per cent with a trend to continue above rather than below this level. There are a number of factors that operate here, as elsewhere, to keep up the high mortality and that are even more effective in warfare, but which it would not be proper to discuss here. Among the improvements it cannot be denied that the intravenous infusion of salt solution which I first introduced at Charity Hospital in 1888, and the *continued* intravenous drip with dextrose (5 per rent) and without adrenalin, which I was the first to use at Touro and at Charity in 1909-10, were of the greatest advantage to these patients in the treatment of shock and hemorrhage and in relieving the dehydration and dechloruration of ileus and peritonitis. And the same may be said of the first use (1909) of the method of continued syphonage of the gastric and duodenal contents through an indwelling gastro-duodenal tube inserted via the naso-pharyngeal route. This practice since then universally adopted here and elsewhere, kept the stomach and duodenum drained by simple syphonage (in a water jug kept under the bed below the patient's level) without the need of any suction apparatus. This procedure came as a veritable godsend to these unfortunate sufferers for it accomplished its purpose (constant drainage) without interferring with the patient's ability to quaff large quantities of cooling drinks which are so necessary to relieve the parching thirst and keep the stomach clean of the foul regurgitations, so characteristic of the paralytic ileus of peritonitis. It cannot be denied that all this was progress, and, that many who would have died of shock and hemorrhage and paralytic ileus were saved by the combination of the continued "drip" and the gastric syphonage.

Unfortunately, dextrose and saline solutions like all other artificial sera lacked the colloidal stability and the vivifying biochemical qualities of blood and plasma and, therefore, failed to sustain their primary resurrecting effect on the brain and on the cardiovascular apparatus. But the intravenous drip with dextrose and saline served its primary purpose nobly,—until blood typing, and blood citration came to so simplify the practice of transfusion that the actual replacement of blood loss, became a safe, practical and universally applicable treatment. Furthermore, a simple technic and an abundant supply of "stored," "canned," or "banked" blood have brought us back to the "continued intravenous drip" of blood or plasma to replace my original dextrose "drip" of 1909-10,—now become, since 1935, (Marriott), the maximum effort of modern medicine to replace lost blood and to restore human life.

Despite the enormous help that transfusion gives these abdominal and chest wounded patients by lifting them out of the primary perils of shock and hemorrhage,—transfusion has its limitations. For while it gives the patients an opportunity to benefit by life-saving operations, it cannot cope with the after coming infections (peritonitis, ileus, abscess and septic complication) which are the chief causes of death despite transfusion and the most skilled surgeons.

At present all eyes and hopes are turned to the sulfa-compounds and their derivatives for another miracle that may do for infection what transfusion has done for shock and hemorrhage,—thereby saving the victims of these abdominal wounds from the many graves that still yawn before them. Unfortunately these remarkable agents of a new chemotherapy have come too recently into the therapeutic arena, to justify statements of their value as preventives or controllers of the abdominal infections.

We trust that the very recent and favorable news reported by the surgeons at Pearl Harbor and by the British in the London hospitals may be confirmed,—to the effect that the local applications of the sufanils to contaminated wounds will inhibit all bacterial activity and for so long after contamination, that excision of the contaminated tissues may be delayed almost indefinitely without spoiling the prospects of an excision with an aseptic healing. If such reports can be confirmed by an extension of the same therapy to abdominal surgery, we may expect a decided lowering in the mortality of these penetrating gunshot wounds of the abdomen, for it is, we repeat, the secondary infections that are chiefly responsible for the persistent deadliness of these wounds as they are exhibited in our hospital statistics.

Dr. Joseph A. Danna (New Orleans): The thing that impresses me most about this paper is the amount of work that Dr. Loria has put into the job. You have to have the experience of getting up the data for a paper like this to realize how much work he has put into it. I think we should be very grateful to him for having presented such a splendid resume of the subject.

As Dr. Loria has well illustrated in the study of the anatomy, the reason why the mortality of these cases is so high, and why the condition is more serious than either thoracic or abdominal gunshot wounds separately, is because it involves the upper half of the abdomen. I once stated that if I had to be shot I would rather be shot through the head than through the upper abdomen. As Dr. Loria showed you, there are a number of vital organs involved and a number of large blood vessels. It is almost impossible to go through that portion of the abdomen without wounding

one or two large vessels. So I believe that is the prime reason why these cases have such a high mortality.

There are two types of these cases. Sitting there I could not help but think of two historic instances, one of each type. Some of you were not living when President McKinley was killed. He was shot through the upper abdomen and through the stomach. They operated on him and closed the perforations and thought they had done a good job. But he died because of complications that occurred after. These complications occur late. They are due to the leakage of the suture line, or tissue necrosis, or the effect of the digestive juices on the sutures or to catgut which becomes infected. Of course, the kidney or pancreas or duodenum may be wounded and though death does not take place immediately, it will later. Then there is the second type, the acute form. When I read the afternoon extra stating that Huey Long was shot and read the description of the wound, I said "Huey's gone." He had been shot through the upper abdomen and was an example of this second type. There were multiple intra-abdominal wounds and multiple bleeding points. Hemorrhage and shock are the outstanding features. The more you work, the more your patient is bleeding; the more he bleeds, the more he is shocked. One transfusion after another is given without avail. By the time you are through you are sure he is not going to get over it.

Dr. C. Grenes Cole (New Orleans): I do not know that I have the audacity to discuss this paper after the eminent Dr. Matas and Dr. Danna have so thoroughly covered the field. However, I am going to say that we are grateful to Dr. Loria for this splendid paper, and also pleased to have contributed to this paper by allowing Dr. Loria to review our autopsy reports at the coroner's office, covering the period of some eight years during which I have been coroner of this parish.

I think Dr. Loria should be congratulated on bringing us these new determinations, and I am sure the paper has been appreciated by all as much as it has been by me.

Dr. Frank L. Loria (In closing): At this time I want to express my gratitude to Dr. Matas for having interested me in this subject soon after I finished my internship at Charity Hospital. Dr. Matas was made chairman of the Committee on Abdominal Gunshot Wounds, and he had me named secretary, when this Committee was formed in 1925. It became my duty, as secretary, to see as many of the patients operated upon, as I could —and which numbered 40 or 50—to watch the progress of each case during the hospital stay of these patients, to see them after leaving the hospital, if possible, and to attend the autopsy at the coroner's office if the person died. Through the kindness of Dr. George Roeling I not only attended each of the autopsies during the period of this preliminary investigation, but was likewise privileged actually to perform many of them myself.

In answer to Dr. Matas' question I wish to say that I took up the study of these cases from January 1, 1927. This is about where I left off in the studies of the first series (of 112 cases), and I felt I should include each case from that date until January 1, 1942. With some reluctance I might add that this study has taken about 15 months, and there are still certain phases that I hope to analyze.

PROTEIN MALNUTRITION IN PREGNANCY*

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Experience with the marked nutritional deficiencies so frequently observed in patients on the obstetric service of the Charity Hospital of Louisiana prompted us to undertake an extensive dietary survey of a large number of pregnant women in the New Orleans area. Our interest was further stimulated by a detailed study of a small group of patients in the last trimester of pregnancy who were admitted to the hospital because of massive edema of obscure etiology. In every one of the patients in this special group the usual conditions that cause edema in pregnancy were absent, but a common factor of hypoproteinemia could be demonstrated and could be clearly attributed to protein malnutrition. The diets, without exception, were critically low in protein.[1] The literature contains many contributions dealing with the dietary requirements necessary for optimum nutrition during pregnancy, but reports on actual

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†From the Department of Obstetrics and Gynecology of the School of Medicine of Louisiana State University, and the Department of Dietetics of the Charity Hospital of Louisiana at New Orleans.

Patients in Prenatal Diet Study - Obstetric Data (225 cases)

		Negro Clinic Pts.	White Clinic Pts.	White Private Pts.
Number		100	100	25
Age in Years	Youngest	14	15	20
	Oldest	42	44	37
	Average	24	26	28
Parity	Primipara	25 %	38 %	40 %
	Over 5	14 %	9 %	0 %
	Average	4 preg.	3 preg.	1 preg.
Gestation	10-20 weeks	10 %	34 %	45 %
	20-30 "	64 %	58 %	25 %
	30-40 "	26 %	8 %	30 %
	Average	25 weeks	18 weeks	15 weeks
Average weekly income		$ 9.00	$ 17.00	$ 75.00

dietary investigations are rare, and nothing on the subject has been published from this locality. We were interested, therefore, in determining the actual food intake during pregnancy of a series of women from our own locality. The investigation extended over an 18 month period, ending in April, 1942.

The chief purpose of the present communication is to report the actual protein intake of a large diversified group of local prenatal patients, and to compare the protein dietaries of these women with the standard allowances set by the National Research Council and with recent reports from other localities. This communication is concerned only with an evaluation of protein; similar studies for subsequent publication are being prepared on carbohydrates, fats, minerals and accessory food factors. The principal food sources of protein, minerals and vitamins are more or less identical, and it is not amiss to state here that, as a rule, we found the diets low in protein, minerals and vitamins, high in carbohydrate and about normal in fat content.

CASE MATERIAL AND METHOD OF STUDY

Dietary investigations were carried out on 225 pregnant women. Of the total cases, the Charity Hospital prenatal clinics supplied 200 patients, of which 100 were white and 100 colored, while 25 white private patients were obtained for study through the cooperation of their physicians. The distribution of cases was such that it afforded an opportunity for comparative studies of the diets of several representative racial, economic and intelligence groups. The patients were selected without prejudice except that those with obvious complications were excluded.

The pertinent general and obstetric data are contained in table 1. It should be noted that a composite picture of a typical patient from the group study reveals that she is about 25 years old, has had three babies and is at mid-term in this pregnancy. The average weekly income of her family is $20.00; average income per person is only $4.00.

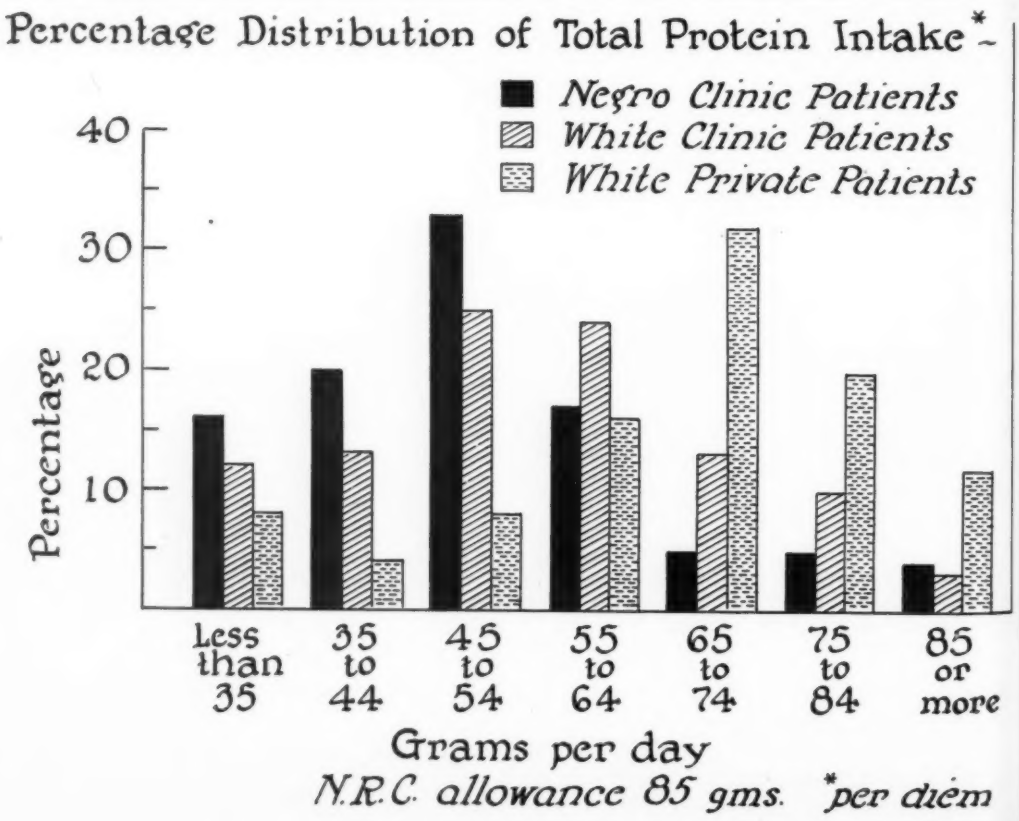
The dietary information was secured, analyzed and calculated by competent nu-

tritionists employing a standard method based on the patient's estimation of the food ingested. The seven-day food intake record was found to be most satisfactory. The patient at the first interview was given simple but concise instructions by the dietitian. She was told to write down in detail for one week all foods and liquids ingested each day, specifying amounts or sizes of servings in terms of ordinary household measurements such as tablespoonful, cupful, ounces, solid food in inches or large, average or small serving. The food record for seven days was checked carefully and then analyzed for the food values. By dividing the total food values by seven the average daily food intake was obtained.

Methods of investigation which rely upon the intelligence, integrity and cooperation of the patient naturally are subject to human errors. To check the accuracy of the diet record method we hospitalized five normal pregnant women and fed them a known weighed diet. Comparison of the actual intake of protein with the intake calculated from the diet records of the patient revealed a mean error of ± 7 per cent, with a range of plus 6 minus 4 grams. We were gratified to learn that satisfactory nutritional studies are possible, even in the lower economic and intelligence groups, and more important, that pregnant women of all social strata are highly receptive to effective teaching of diet and nutrition.

ANALYSIS OF THE PROTEIN INGESTION OF 225 PREGNANT WOMEN

The National Research Council on Nutrition recommends a daily allowance of 85 grams of protein for the average pregnant woman. Most of the patients (91 per cent) in the total series studied received less than 85 grams of protein per day; the average was 52 grams. Only 12 per cent of the private patients, 3 per cent of the white and 4 per cent of the negro clinic patients received the recommended amount (fig. 1). The



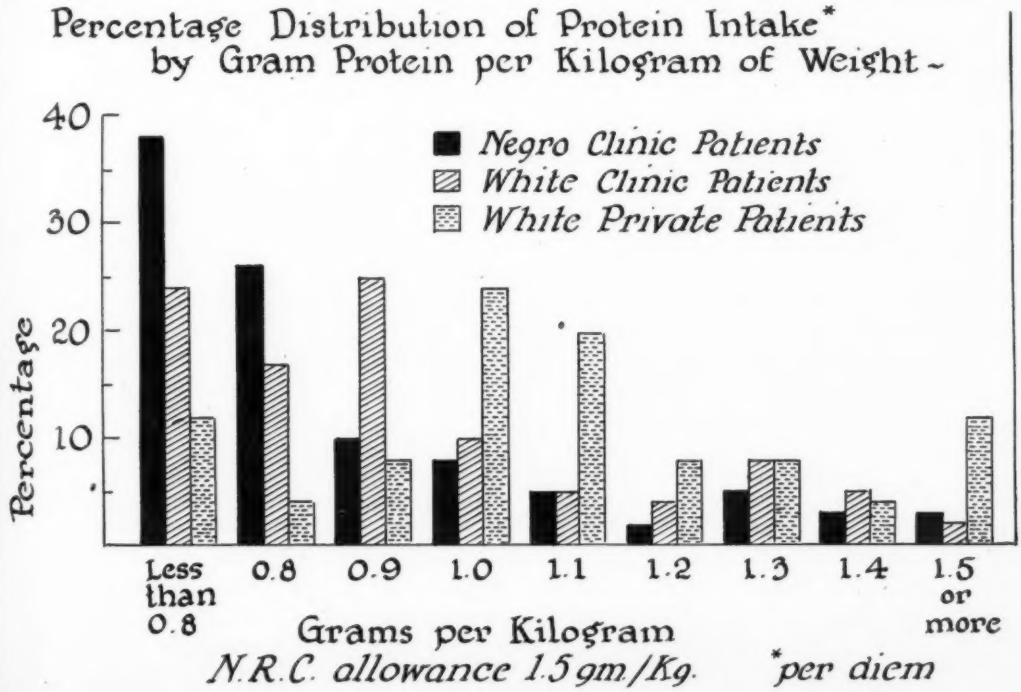
average protein intake for each group was 72, 54 and 46 grams, respectively.

The weights of pregnant women vary considerably and are dependent on such normal factors as age, height and duration of gestation and such abnormal conditions as overweight, underweight and edema. To obviate the effect of these factors and conditions the food intake may be expressed in terms of ideal body weight. For this study the ideal weight was based on the age, height, weight tables accepted as standard by life insurance companies. To this weight was added an allowance for the stage of gestation. No change was made for the first trimester, a gain of half a pound per week was allowed in the second trimester and a gain of one pound per week was allowed in the third trimester.

The protein intake recommended for the latter half of pregnancy is 1.5 gram per kilogram of body weight. When expressed in terms of ideal body weight, 93 per cent of the total series received less than the estimated requirement of 1.5 gram of protein per kilogram (fig. 2). The average for the entire group was 0.91 gram, for the private patients 1.22 gram, for the white clinic patients 0.93 gram, and for the negroes 0.82 gram.

The median intake, with 50 per cent of the patients above and an equal number below the level, is perhaps more truly characteristic than the average or mean because it is less affected by extreme values. The median protein intake for the entire series was 0.93 gram. Comparative studies of the median intake for the various groups reveal that the intake of the private patients, 1.18 gram, exceeds that of the white charity patients by 23 per cent and that of the colored patients by 32 per cent (table 2). *See Page 118.*

Because the nutritive value of protein ultimately depends upon the amino-acid content it is essential that dietary investigations consider the quality as well as the quantity of the ingested proteins. Proteins derived from animal sources contain all the essential amino-acids and therefore are of high biologic value; vegetable and cereal foods, with few exceptions, lack some of the



Actual Protein Intake - Gram Protein/Kilo Weight

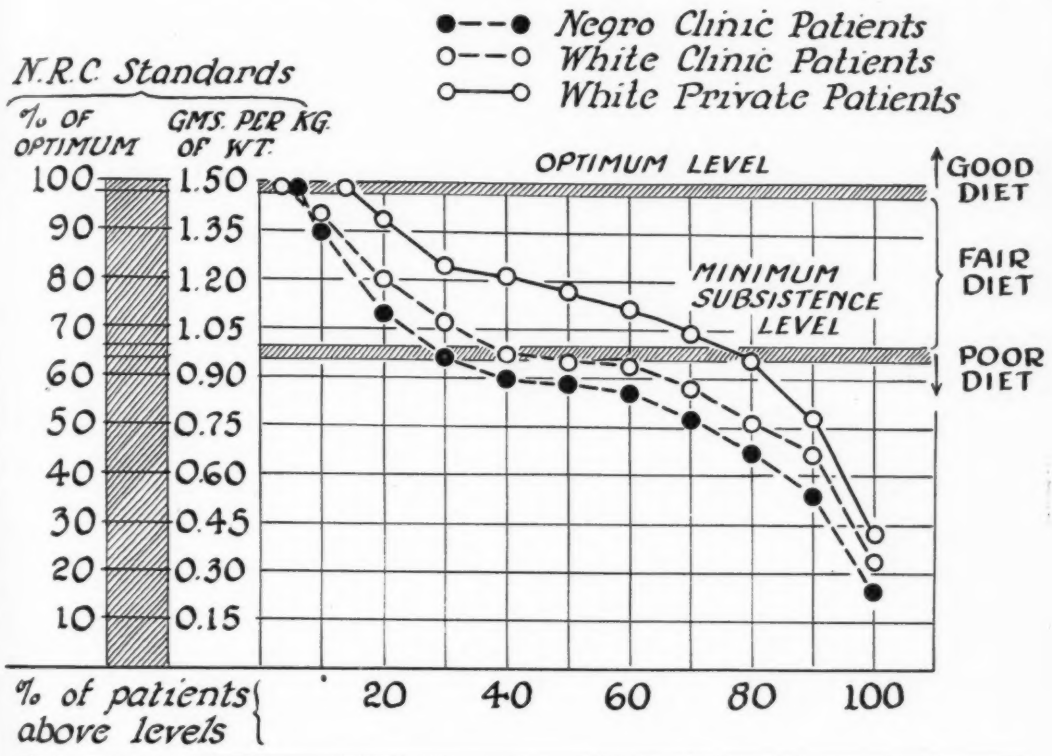
	Negro Clinic Patients	*White Clinic Patients*	*White Private Patients*	*Totals*
Highest	2.1	1.9	2.0	
Lowest	.24	.33	.38	
Mean	(46. gms.) .82	(54. gms.) .93	(72. gms.) 1.22	(52. gms.) .91
Median	.86	.95	1.18	.93

important amino-acids so they are of lower biologic quality. It is recommended that the animal proteins constitute approximately 65 per cent of the total protein intake. In our series the average for the private patients was 61 per cent, for the white charity group 55 per cent and for the negro, 50 per cent. Great variations were found in the amount of the total protein intake derived from animal sources, the range was from 86 per cent to 15 per cent.

We have shown that the study revealed protein dietary inadequacies in all of the groups, with a frequency and extent which were nothing short of startling. We have also shown that the diets of the charity patients, as a general rule, were much lower in protein content than those of the private patients and that in the charity group the colored ate less protein than the white. It must not be forgotten, however, that marked exceptions to the rule occur. The highest and the lowest protein intake, for instance, was found in the colored group, yet 12 per cent of the private patients had intakes of less than 0.8 gram of protein per kilogram of weight. Neither a high I.Q. nor easy financial circumstances preclude the possibility of a defective and deficient diet.

Each patient in whom the investigation revealed a deficiency in dietary protein was questioned concerning the cause for her poor diet. A number of reasons and excuses were given but, in general, they may be classified in the following categories: economic; ignorance; custom or habit; actual or supposed food idiosyncrasies; erroneous dietary advice during pregnancy.

The first reason for restriction in protein intake is valid to some extent because foods which supply proteins of high biologic value are relatively expensive and cannot be secured on the limited income of patients of the poorer classes. Even in this group, however, a low financial status rarely was the only cause for deficiencies in the diet. Here too, ignorance usually played a greater part. Investigations at several low cost markets proved that patients often had spent their money unwisely, actually having paid more for the food stuffs of a poor diet than would have been necessary for a good diet. Excuses other than economic, moreover, cannot be condoned; indeed, they should be condemned. Ready solution of



the problem lies in an educational program of effective and intelligent nutrition teaching and this might well be undertaken as an important and integral part of prenatal care.

COMPARATIVE DATA ON PROTEIN INGESTION

The National Research Council, in establishing a set of standards for the daily intake of protein, has recommended 1.5 gram of protein per kilogram of ideal weight as the optimum level and 1.0 gram as the minimum subsistence level for pregnancy. Diets containing 1.5 gram or more are classified as good, diets containing from 1.0 to 1.5 gram are classified as fair, and the remainder are classified as poor. When our data were measured by this yardstick of protein nutrition we found 64 per cent of our cases in the poor diet group, including 24 per cent of the private patients, 66 per cent of the white charity patients and 74 per cent of the colored charity patients (fig. 3).

When compared with other medical standards the criteria set by the N.R.C. for protein intake seem unnecessarily rigid and somewhat high. In hematology, for example, hemoglobin values of 100 per cent and red blood counts of 5,000,000 are considered excellent, but values of 90 per cent and 4,500,000 would undoubtedly be termed good. We would be inclined, from our own investigations and experience, to modify the present classification of protein intake during pregnancy by using criteria as follows:

For intakes exceeding 1.5 gram per kilo—diets excellent in protein; for intakes between 1.2 and 1.5 gram—diets good in protein; for intakes between 0.9 and 1.2 gram—diets fair in protein; for intakes less than 0.9 gram—diets poor in protein; for intakes less than 0.75 gram—diets very poor in protein.

Even with these more liberal criteria, however, more than 10 per cent of the private patients, 20 per cent of the white charity patients and 30 per cent of the colored charity patients fall into the group which ingests diets not only very poor in protein, but low to a dangerous degree.

Because surprisingly few contributions dealing with dietary investigations in pregnancy have appeared in the literature, comprehensive comparative studies of protein ingestion in the various sections of the country are impossible. Comparison with available recent data from several areas reveals, however, that protein dietary deficiencies are both more frequent and more pronounced in the New Orleans area than in the other localities with the possible exception of the mountainous region of the Carolinas (table 3).

PROTEIN MALNUTRITION IN PREGNANCY

While a marked deficiency in the protein intake can by itself readily produce a state of protein malnutrition, the condition often is aggravated and accelerated by a deficient absorption or utilization of ingested protein, or an excessive loss of protein because of vomiting, diarrhea, or proteinuria. Since impairment of the digestion with associated impairment of absorption and utilization of the dietary intake is common in pregnancy, due allowance should be made for these losses in estimating the nutritional requirements. Various diseases, infections and infestations which cause rapid protein deficits may also play important roles and should be taken into consideration. Among these conditions may be mentioned such abnormalities as the pernicious vomiting and the toxemias of pregnancy, which are peculiar to and specific for pregnancy, and also such chronic diseases, as hookworm, malaria, anemia, sprue, nephritis or nephrosis which may be associated with pregnancy and account for the loss of large amounts of protein.

Protein malnutrition is due to a protein deficit caused, as has been pointed out, by

Comparative Data on Protein Dietaries~

Author	Good diet	Fair diet	Poor diet
Burke (Boston) 1941	19%	54%	27%
Ebbs (Toronto) 1941.	24%	38%	38%
Williams (Philadelphia) 1942	13%	64%	23%
Ross (N. Carolina) 1938.	0	25%	75%
Arnell & Guerriero (New Orleans)			
Colored	3%	23%	74%
White clinic	2%	32%	66%
White private	12%	64%	24%

dietary inadequacy; the ingestion of insufficient protein to supply normal or abnormal requirements. A protein deficit in the pregnant woman lowers the nitrogen level of the body, causing an abnormal exchange of protein between the tissue cells and the blood plasma, and with the depletion of the body tissues it may lead to nutritional edema. Anemia, poor muscle tone, lowered resistance and insufficient lactation may also result from protein deficiency.

During pregnancy the average normal woman gains approximately 18-22 pounds, which represents the growth of the uterus, breasts and other organs as well as the fetus and placenta. In other words, a pregnant woman in nine months reproduces tissue almost equivalent to one-fifth of her own normal body weight. It must not be forgotten that the chief function of protein is to supply the tissue-building material of the body, that the need for this material is increased during pregnancy and that the protein deficiency in the diet of the nonpregnant woman may become dangerous when maternity intervenes. With dietary deficiencies of the degree revealed by our study and with the increased demands during pregnancy, it is surprising that severe protein malnutrition is not observed on the obstetric service more frequently.

RELATIONSHIP OF PROTEIN INTAKE TO CERTAIN OBSTETRIC COMPLICATIONS

In this discussion of the possible relationship of dietary protein to several of the important obstetric complications, we wish to emphasize at the onset that close correlation of the various factors could scarcely be expected because of individual differences in the processes of absorption and utilization of the ingested protein. In animal experimentation, for instance, it can be shown that the utilization of protein is more complete when the intake is low than when the diet is normal. The same is apparently true in humans. Other factors also are of more or less importance. We have seen that the diets of the colored patients, almost without exception, were deficient in protein. It seems reasonable to assume, in view of other information we possess concerning this race, that colored women, because of their habitually unbalanced diets, are more resistant than white patients to dietary defects. Also, it is not at all unlikely that fares, commonly used by charity patients, would not sustain life in the case of many private patients.

In table 4 are shown the average findings of pertinent laboratory and clinical data in correlation with the protein intake. Although the results are interesting, and in some instances even striking, we must reemphasize that they do not warrant definite conclusions regarding the effect of protein deficiencies in the prenatal diet because of the influencing factors previously mentioned and because the number of cases in some categories is small. Then too, each patient, at the beginning of the investigation, received dietary advice and instruction which, we trust, improved her nutrition and final obstetric course.

Certain obstetric complications and abnormalities which may be initiated or aggravated by protein deficiency should be briefly discussed. These are included in table 4. [*See Table 4, Page 122.*]

Anemia: We are prone to forget that hemoglobin contains protein as well as iron and that deficiencies in either or both can result in anemia. Anemias due to severe protein malnutrition are often of the hyperchromic macrocytic type and we have observed several cases in which the hematologic studies closely simulated those of pernicious anemia of pregnancy but who responded well to blood transfusions and diets high in protein and iron. While it is true that the principal food sources of iron and protein are quite similar, the components vary considerably in different foods, and correction of the iron deficiency by means of diet or medication without correcting the associated protein deficiency will not improve the anemia.

In the series studied we found the intake of iron somewhat higher than that of pro-

Dietary Correlation with Pertinent Laboratory and Clinical Data -

	Protein Intake		
	Good	Fair	Poor
Blood studies (Averages)	(5 cases)	(20 cases)	(20 cases)
Hemoglobin	11.0 gms.	9.1 gms.	8.4 gms.
Serum protein	7.1 gms. %	7.1 gms. %	6.3 gms. %
Complications (% of cases)	(5 cases)	(55 cases)	(140 cases)
Preeclampsia	0	5.5%	8.5%
Edema only	0	10.8%	40.0%
Maternal mortality	0	0	0
Maternal morbidity	0	3.6%	8.6%
Fetal mortality	0	1.8%	5.7%
Average weight gain	22 lbs.	27 lbs.	26 lbs
Average birth weight	7.2 "	7.2 "	7 "

tein, but the parallelism between the two was fairly close; inadequacy in one usually meant inadequacy in the other. The hemoglobin average of the poor diet group, 8.4 grams (56 per cent), is 17 per cent lower than that of the good diet group, 11 grams (73 per cent).

Nutritional Edema: Although contributory factors play roles of varying importance, the distribution of extravascular, extracellular water is chiefly dependent upon the plasma protein concentration of the blood. Edema is likely to occur whenever the colloid osmotic pressure of the serum proteins is less than 20 cm. of water, at which level the serum protein concentration is usually less than 5.5 grams per cent and the serum albumin concentration is less than 2.5 grams per cent.

In our detailed study[1] of eight pregnant women exhibiting severe nutritional edema, the average value for serum protein was 4.2 grams per cent, serum albumin 2.03 grams per cent, serum globulin 2.16 grams per cent, albumin-globulin ratio 0.94, and the average calculated colloid osmotic pressure was 14.21 cm. of water. Investigation of the diets revealed an average protein intake of only 0.54 gram per kilogram of body weight. The edema in every one of these cases was due to a hypoproteinemia caused by an extreme protein deficit. Correction of the protein deficit by means of high protein diet, blood and plasma transfusions and casein digests administered parenterally, resulted in every instance, in profuse diuresis and clinical improvement. The average weight loss, representing elimination of

edema fluid, was 8.5 kilograms, the range 7.4 to 19 kilograms. (fig. 4).

Nutritional edema in pregnancy with typical swelling of the vulva, thighs and abdominal wall.

In the series presently studied the average serum protein concentration was lowest in the cases in the poor diet group. It is interesting to note that so-called idiopathic edema of demonstrable degree occurred in patients in this group with a frequency four times greater than in those in the fair diet group. We found no direct correlation, however, between the serum protein levels and the degree of edema.

Specific Toxemias of Pregnancy: There is considerable evidence pointing to a close relationship between protein metabolism and the toxemias of pregnancy. By no means do we wish to imply that we consider protein malnutrition the primary factor in the causation of pre-eclampsia and eclampsia. Neither do we believe that protein dietary adequacy alone will prevent or cure the condition. From our own experience we are convinced, however, that the patient in a state of good nutrition not only is less likely to develop toxemia but also is far more amenable to treatment. It is perfectly possible, moreover, for protein malnutrition and toxemia to coexist, and the edema in these cases may be aggravated and intractable because of the associated hypoproteinemia. Treatment of both conditions is essential.

To restrict meat and eggs in the diet of pregnant women has been common medical practice and is still done to a considerable extent. The reason for this is that these protein foods have long been associated with the toxemias of pregnancy, and were and still are considered by many physicians to be one of the causes of toxemia. Recent investigations have definitely disproved that a liberal intake of protein is a cause of toxemia. On the contrary, we can say with reasonable certainty that all evidence points to the contrary.

Weight: The average maternal weight gain during pregnancy was less in the good diet group than in the fair and poor diet groups. Some of the added weight might be explained by edema but an analysis of the food charts revealed tendencies toward high ingestion of carbohydrate and fat when the protein intake was low. It is reasonable to assume that protein foods satisfy appetite earlier than the others and make it content with fewer calories. In this respect we have found high protein diets of value for weight restriction during pregnancy.

The average birth weight for the babies in the three groups was approximately the same. We may conclude that the fetus in utero is a true parasite drawing nutrients from the mother, even to the extent of her detriment when necessary, and that, at present, no method is known by which birth weight can be controlled by dietary means.

Mortaltiy and Morbidity: Subclinical nutritional deficiencies are dangerous during pregnancy not only because they may lead to actual deficiency diseases but also because they definitely lower the general as well as the specific resistance of the patient. Normal pregnancy and parturition place tremendous strains on the individual and these are increased manyfold by the presence of complications and abnormalities and the traumatic effects of operative delivery. The prognosis often is dependent primarily

on the nutritional status of the patient. In placenta previa associated with considerable blood loss, for instance, the hazards are greatly increased if the patient suffers from an antecedent anemia.

Recent investigations in natural immunity have proved that antibodies are protein substances which are synthesized from proteins eaten as food, and that dietary protein deficiency, furthermore, causes the body to lose its ability to make the protective antibodies. If this ability is lacking there is an increased susceptibility to many infections which are readily tolerated when sufficient protein is ingested to enable antibody production.

In considering the problems of maternal and fetal mortality and morbidity, it seems probable that attention in the past has been focused too exclusively on the obstetric complications and abnormalities and not enough on the general nutrition of the patient. We feel certain the future will demonstrate the importance of diet and nutrition as primary factors in decreasing mortality and morbidity.

DISTRIBUTION OF PROTEIN IN FOODS

In undertaking a survey of dietary protein, the physician should bear in mind that the metabolism of protein is unique in several ways. The protein requirements of the body, unlike those for carbohydrate and fat, can be supplied only by protein adequacy in the diet. Whereas the body can utilize excess protein to make glucose, a carbohydrate, and glucose to make a fat, it cannot reverse the process. Neither can the body manufacture for itself a single one of the essential amino-acids, and these will be lacking unless the protein foods contain the particular acids when eaten. Because no substitution is possible in protein metabolism, it is obvious that the diet must contain enough protein to furnish all of the essential amino-acids in sufficient amounts.

In order to evaluate the protein intake with accuracy and to make the adjustments necessary for dietary adequacy in protein, it is essential for the physician to know the quantity and quality of the protein content of various common foods. The values for some of the outstanding food sources of protein are illustrated in fig. 5. (*Page 125*). There is great variation in the protein content of food stuffs; in some it is so low that enormous quantities must be consumed in order to yield even a subsistence level of protein. (*See "Supplementary data" page 126*).

In general, the physician should prescribe prenatal diets containing the optimum quantities of protein recommended for pregnancy. Of greater importance, however, he should insist that the diets include protein foods of the highest biological quality, specifically, the flesh proteins derived from meats, fish and fowl, the protein of milk and milk products and eggs. The animal proteins may be supplemented in the diet by the inclusion of plant proteins from vegetable and grain sources. The proteins derived from peas, beans, lentils, cereals and bread are, as a rule, of lower biologic value, but the cost is so low that large quantities may be purchased and used as "poor man's meat." Of particular interest to the South, if recent investigations are confirmed, is the evidence that the soy bean, cottonseed, peanut, almond and cashew nut contain complete proteins.

The protein requirement should be covered adequately if the daily food allowance during pregnancy provides the following:

One quart of milk	30 grams
A liberal serving of meat	30 grams
One egg	7 grams
Cereals (1 serving)	8 grams
Bread (3 slices)	9 grams
Vegetables and fruit (2 servings)	10 grams

This diet yields approximately 94 grams of protein, including 67 grams of protein of high quality. When restriction of meat is necessary, for financial or other reasons, larger quantities of plant proteins from diversified sources should be used and possible deficiencies prevented by insisting that the diet contain at least one quart of milk or its equivalent in milk products.

SUMMARY AND CONCLUSIONS

1. The actual daily protein intake of 225 unselected antepartum patients is presented. The group included private pa-

SELECTED SERVING
Edible portion
QUALITY
AMOUNT of PROTEIN in GRAMS
5
10
15
20
25
Liver 4 oz. good
Veal 4 oz. good
Lean meat 4 oz. good
Fowl 4 oz. good
Sea food 4 oz. good
Fish 4 oz. good
Lamb 4 oz. good
Pork 4 oz. good
Glandular meats and heart 4 oz. good
Beef 4 oz. good
Cheese (cottage) 1 4/5 oz. good
Beans, Peas, Lentils (dried) 1 oz. (¼ cup, cooked) poor
Eggs 1 4/5 oz. (1 egg) good
Milk 7 oz. (1 glass) good
Cheese ⅔ oz. good
Nuts ½ oz. fair
Bread 1 oz. (1 slice) fair
Greens 3½ oz. fair
Cereals ¾ oz. (¼ cup cooked) fair
Vegetables (fresh) 3½ oz. fair
Fruit (dried) 1 oz. poor
Fruit (fresh) 3½ oz. poor
The Quality and Quantity of Protein from different Foods -

tients as well as white and colored charity patients, and thus permits comparative studies of food habits.

2. Protein dietary defects and deficiencies were found with startling frequency. Dangerously low intakes were discovered in 30 per cent of the colored, 20 per cent of the white charity and 10 per cent of the private patients.

3. Diets good in protein were infrequent. Only 3 per cent of the colored, 2 per cent of the white clinic and 12 per cent of the private patients ingested the optimum protein allowance recommended by the National Research Council for pregnancy.

4. Pregnant women of the New Orleans area seem to eat less protein than their sisters in other sections of the country.

5. The subclinical and clinical effects of protein malnutrition are discussed. Trends are pointed out but definite conclusions must await further investigation. It is obvious, however, that the greatest single factor in maternal mortality lies in the resistance of the patient and that resistance is dependent primarily on the state of nutrition.

6. Pregnant women should ingest a diet adequate in protein. The protein should be in a readily assimilable form, should be

from animal as well as from cereal and vegetable sources, and should contain the necessary amino-acids.

7. Adequate prenatal care should include a careful dietary survey, with particular emphasis on protein, minerals and vitamins and the prompt correction early in pregnancy of any dietary deficiency. By bearing in mind a few basic facts any competent physician can give effective instruction and advice on diet and nutrition.

SUPPLEMENTARY DATA

SOURCES OF PROTEIN

Amount of food that contains 60 grams

Food	Amount
Meat	2/3 pound
Fish	2/3 pound
Poultry	2/3 pound
Eggs	8 pounds
Milk	2 quarts
Cheese, Cheddar	1/2 pound
Beans, navy, dry	2/3 pound
Beans, soy, dry	1/3 pound
Peas, dry	2/3 pound
Bread, white	1 1/2 pounds

REFERENCE

1. Arnell, R. E., and Guerriero, W. F.: Nutritional edema in pregnancy, Am. J. Obst. & Gynec., 43:467, 1942.

DISCUSSION:

Dr. E. L. Zander (New Orleans): The current general interest in the subject of diet and nutrition has made such terms as "optimum diet", "hidden hunger" and "subclinical food deficiency" familiar not only to the physician and dietitian, but to the public as well. Federal government agencies and private industry are uniting to spread the gospel of good health through optimum nutrition. In order to avoid inaccuracies, half-truths and mis-statements, it is imperative that physicians be actively in the vanguard of nutrition research and education. They must know not only what patients should eat but what they do eat and be able to give dietary advice in simple, effective terms.

Pregnancy imposes special demands for protein food. If a deficit in intake continues too long, serum albumin is reduced so far that the colloid osmotic pressure of the plasma is decreased to a point where edema appears. Reduced serum protein is an indication for emphasis on higher protein intake.

In answer to what type of protein is required, animal sources are advisable for a large share of the protein if the total protein intake is small and plant protein usually insufficient unless supplemented by milk and eggs.

Chief sources of concentrated food protein are meat, milk products (except butter), eggs, cereal grains, peas, beans and nuts.

For regeneration of blood proteins, liver and milk are considered unusually valuable. Liver contains iron and milk casein. In the presence of marked albuminuria the protein intake should be generous. If non-protein nitrogen or urea nitrogen of the blood is definitely elevated there is some benefit from restricting protein intake. If there is no evidence of azotemia protein restriction is of questionable value. When renal disease is marked by excretion of much protein and nitrogen retention, better to give sufficient protein to replace serum albumin loss.

It is possible to reduce weight with safety in the pregnant woman planning the diet so that most of the fat metabolism is secured from the depots in the patient's body rather than from food. Protein intake need not be more than ordinarily high. Carbohydrate must be provided in adequate amounts to prevent ketosis.

The authors' contribution gives us a comprehensive idea of the common deficiencies in the diets of pregnant women. It represents a detailed study in a virgin field. By bearing their results and conclusions in mind we can give better prenatal care.

Dr. Earl Conway Smith (New Orleans): When I see such an excellent presentation as this I always try to find out some way to apply it practically in my own practice.

This presentation is but one phase in the analysis of nutrition in pregnancy in this locality. The physiologic aspects of protein deprivation as evidenced in this report are definitely related to social and economic factors. Likewise it has a definite bearing upon maternal and fetal morbidity, if not upon mortality. This indicates the necessity of adequate prenatal instruction with special reference to the diet, and in this connection, I do not refer only to protein but to other essential dietary factors as well.

The average physician is not much interested in the diet of his patient unless there is some specific condition that makes the diet an outstanding part of the therapy. Furthermore, social, economic, and locality are factors that make it difficult for certain classes of patients to obtain the essentials of diet. If this essay is any index of the state of nutrition today, then we can expect greater deficiencies in the future if specific measures are not taken to alleviate the causes.

I have adopted a policy of obtaining a sample diet for one week from my private patients when they first come for antenatal care. This permits me to see the major discrepancies and suggest corrections for a better balanced diet. Patients as a whole do not know what a well balanced diet

consists of. It remains then for the physician to be able properly to advise a patient along correct dietary lines, for not many families can or will obtain advice from expert dietitians.

If there were not serious discrepancies in the diets of most everyone, we would not have been deluged by the wave of vitamin propaganda of today. Certainly, for the average diet the essential requirements can be obtained from the foods we eat, if we only know what to select, and that is indeed simplicity in itself. In regard to general foods, I mean specifically proteins, minerals, and vitamin-containing foods, we know the kind and amounts required and see that the patient gets them by simply requiring other sample cross section diets at later dates during pregnancy. Some of the diets submitted by my patients of the higher financial bracket were deplorable as well as some from the lower bracket. It was astonishing to note in some instances that the bulk of caloric requirement was made up essentially of carbohydrates with a deficiency of protein, and this is dangerous.

I have not had any serious case of edema occur among my private pregnant women, only the occasional swelling of the feet and legs in the last trimester, and I do not recall a single case in which the swelling was so great that a larger size pair of shoes had to be obtained. And this is simply because of better balanced diets, with particular attention to adequate protein, control of weight gain, and of salt and water intake, and with a serious attempt to prevent anemia.

Dr. R. E. Arnell (In closing): Misinformation concerning correct dietary principles is responsible for many cases of malnutrition. A recent case illustrates the point. The patient, a young primipara in the seventh month of gestation, was complaining bitterly because her activities were curtailed by edema of the feet, angles and legs. Discrete questioning revealed that conscientious prenatal care including dietary advice had been given her by her physician. He also had furnished a printed form with sample diets for pregnancy. The patient, however as often happens, disregarded completely the advice of her physician, placing herself in the hands of her mother who, because she had had several babies, considered herself an expert in such matters. Meat and eggs were considered harmful and were eliminated from the diet, milk was the only protein allowed. The patient was instructed to tell her story to her physician. He corrected the deficiency immediately and within a short time the edema had disappeared completely.

Since the advent of World War II the science of nutrition has made great advances. It is now generally recognized that ample foodstuffs and good food habits, not only for the armed forces but for the civilian population as well, will be major factors in winning the war. The physician, the dietitian, the nurse must accept the responsibility for disseminating the gospel of good nutrition; it must not be relinquished to the politician or business concern.

In conclusion, we take this opportunity to express our appreciation to the many individuals who aided us throughout this study, particularly Drs. Zander and Smith and the Dietary Department of Charity Hospital.

THE IMPORTANCE OF EARLY DIAGNOSIS IN GLAUCOMA*

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This paper is intended for all who are engaged in the practice of medicine but especially for the general practioner who is not familiar with glaucoma and consequently does not know the damage done by this disease nor does he know what an important role he could play in dealing with this problem which does not come in epidemics but is with us everywhere and at all times. Possibly the time may come when we may be able to recognize a pre-glaucomatous patient and be therefore able to prevent a great many cases of the disease. It has been said that when we are able to recognize tetanus from its symptoms the patient is already in the terminal stage. This may also be true of certain forms of glaucoma.

Ophthalmology has made great advances in the last quarter of a century as the study of general medicine has also done. Ophthalmologists were the first to organize a Medical Board of Examiners and this step has been followed in all the rest of the branches of medicine. The time will soon come when a certificate from one of these boards will be nationally recognized as a desirable possession for one who wishes to be known as a specialist. Along with the increased knowledge of ophthalmology has gone the steady increase of knowledge concerning glaucoma. Glaucoma is not only a danger-

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ous disease for eyesight, but because of its very complexities it is a particularily interesting condition. There has been a tremendous amount of research done on the whole subject in relation to its causes, its pathology and its treatment. There has been a steady increase in the ability to make an early diagnosis. The ability to recognize certain anatomic changes by the introduction and use of the slit lamp and the gonioscope has given valuable information concerning glaucoma in all of its phases, and enables us to explain its origin and development and to indicate the treatment that should be followed. Not only has there been improvement in operative procedures by new methods adopted for the relief of increased intra-ocular tension acting upon principles long established, but also by new drugs it has been made possible to combat hitherto hopeless cases.

I think there can hardly be a medical subject which has received more attention from ophthalmologists and their societies than the topic I wish to discuss. I should like to reiterate that glaucoma is a complex subject. Its diverse forms, symptoms, differences in pathology, differences in etiology, and mode of development, and differences in treatment make its study constitute a tremendous volume. Lately we have begun to consider more earnestly and more systematically, effective measures to unite efforts to combat this disease in large communities where it is practicable to accomplish something realistic. There has been an awakening of interest on the subject in large cities where a great deal of good is expected to develop in conservation of vision by the elimination and prevention of glaucoma and by a study of methods by which this disease can be best dealt with once its development has been recognized. This study will of course be best done by efforts of the profession in its entirety.

If what I have said is true it should not be necessary for me to apologize for reading this paper at our State Medical meeting. I am appealing to you to cooperate with the specialist when once a suspicion has been aroused in order that time will operate to the patient's advantage. I wish to emphasize the fact that the recognition of glaucoma in some of its forms presents great difficulty. When I tell you how different the forms of this disease may be but that they all possess one diagnostic sign, increased intra-ocular tension, and then tell you in the next breath that it may not always be possible to elicit this fact you may be able to understand what a problem glaucoma is and why it is a subject of perennial concern. There is no present purpose to make ophthalmologists of all of you and I know that you will not be able to recognize all cases of glaucoma which come to your office. I am trying to make you glaucoma conscious and am asking you to have a suspicion in your mind when a patient tells you that his sight is dimmed occasionally, that he has noticed rainbows when looking at lights, and that he sometimes has a unilateral or bilateral headache for which household remedies give only slight relief. These symptoms sometimes are associated with an emotional upset, and these emotions may be pleasant or unpleasant. These people frequently complain of inability to keep their eye glasses clear and that they find it necessary frequently to change their lenses.

PATHOGENESIS

We know that there is an entity in which an eye of a certain form, associated with a general condition in which vascular state, nervous instability, racial characteristics, all combine to form a subject who will, under certain circumstances, develop slowly or suddenly a positive glaucoma. It is important that the general practitioner should be able to recognize this condition. I know this is asking a great deal when I consider that it is sometimes difficult for ophthalmologists to do so in all cases. By the recognition of pre-glaucomatous states it may be possible that proper and adequate steps could be undertaken to prevent the development of actual glaucoma.

It is more practicable at this state of our knowledge that all forms of glaucoma should be recognized early and handled properly before serious damage has occurred. It can surely be said of glaucoma

as of syphilis that it is protean in its manifestations. It is also protean in its forms. It is this latter characteristic that I wish to discuss now. Glaucoma has been divided into several classes according to its original mode of occurrence, duration, present state and association with other eye pathology or with general disease. We all know of the parallel columns in our school text books wherein certain characteristic symptoms and signs are outlined in order to be able to differentiate acute glaucoma from acute iritis. This is important for purposes of instruction in calling the students' attention to two serious eye diseases in which appropriate treatment for one would be inappropriate for the other in most cases. To be able to know acute glaucoma is very important but the cases of chronic glaucoma which are not recognized early are much more common and therefore of more interest in this present discussion. Let us try to improve our knowledge of this latter disease. If I can contribute in the smallest part to this purpose I will have been amply rewarded for the difficulty experienced in the preparation of this totally inadequate paper.

We have all been taught that there are certain eyes which are more prone to be affected by glaucoma than are other eyes, because of the fact that far-sighted or hypermetropic eyes are small and that in the anterior part of the eye, where most important eye drainage occurs, there is crowded into a small space a proportionately large crystalline lens and a large ciliary muscle. The cornea of such an eye is also small and by its small size enables us to recognize eyes which have predilection for glaucoma, because the smallness of the diameter of this structure contributes toward circulatory embarrassment produced by the comparatively large size of its enclosed ciliary body, and lens at the angle of the chamber where iris cornea and sclera unite, and where drainage occurs. Under ordinary circumstances the drainage system of the eye is adequate. Should emotion produce its sudden flow of blood to the rich vascular system of the ciliary body, iris obstruction to drainage at this point may result and produce a situation where acute glaucoma can easily follow. The glaucoma thus produced in the acute form and in such a manner also has its fellow in the subacute form or the chronic congestive form wherein the etiology may be akin to acute glaucoma. The period during which the disease is being established covers a longer time in the latter.

The more chronic forms of glaucoma may be sometimes associated with pathology in other parts of the body, and arteriosclerosis and arterial hypertension have been considered by some to play an important part in the development of chronic simple glaucoma. Lues no doubt plays an important part and I believe that focal infection producing a toxemia responsible for vascular changes, no doubt, has a great deal to do with the production of these cases.

SPECIAL EXAMINATIONS

Anatomic studies made with the slit lamp and corneal microscope in living eyes show certain characteristic changes in the angle of the anterior chamber. Anterior synechiae, wherein the attachments form from exudate from the anterior iris, cause embarrassment of drainage through the canal of Schlemm. This is more easily seen with a gonioscope. This form constitutes a very important class of glaucoma and its study explains the wisdom of the modern glaucoma operations. In these cases the filtration operations or the deep basal iridectomies when properly done promise a more certain cure than the old methods used before modern research had established the fact that only compensatory drainage will give permanent relief.

A general practitioner should be able to recognize a shallow anterior chamber. He should acquaint himself by observation of normal eyes what a normal depth should be. The anterior chamber is that part of the eye which lies between the anterior surface of the iris and the posterior surface of the cornea. The general practitioner can learn in an approximate way to determine the normal intra-ocular tension of an eye so as to be able to recognize an eye in which the

tension is increased. He is not expected to use the tonometer to measure accurately the intra-ocular tension but he can, by careful digital palpation when the gaze is directed down, get an idea of what the tension is. This is an accomplishment not easily acquired. Since general practitioners are not accustomed to dealing with so delicate an instrument as the eyeball, the technic of palpation of the eyeball for measuring intra-ocular tension must be practiced often and with care in order to be able to determine the intra-ocular tension even with approximation.

SUMMARY

Let it be understood that when ophthalmologists bring to the attention of their colleagues a matter of as much importance as glaucoma there is not much selfishness in the act. We hope that the profession gives us credit for being conscientious and unselfish in our assertions. As a matter of fact the ophthalmologist treats these patients later. The trouble is just there, as in many instances it is too late. It might be very well that the general practitioner having heard this talk or possibly having read it in a journal may know a little bit more than he did before about this important subject. It might also be that he will not have learned much. I will still accomplish something by having reminded you that there is such a condition as glaucoma and that people have it in their eyes.

I hope that this paper will elicit a full discussion in order to emphasize the importance of the subject.

DISCUSSION

Dr. W. R. Buffington (New Orleans): Dr. Blum has brought to your attention a most timely subject. The control of glaucoma is becoming more important in preventing increasing impairment of vision and blindness in many people. Until recently, since the middle ages, trachoma has been responsible for great suffering and blindness among the people of the world. In countries like the United States, England and France, the disease has all but disappeared, due to improvement in living conditions and scientific correction of qualitative and quantitative diet deficiencies.

Acquired and congenital syphilis has been a leading factor in causing eye diseases and blindness since remote antiquity. Modern treatment, as carried out in large cities like New Orleans where centers have been established for giving treatment, those syphilitic eye diseases causing blindness, namely, iritis, interstitial keratitis and choroiditis, are no longer a public menace. The frequency of these diseases, due directly to lues, have been reduced at least 70 per cent in the last 20 years.

While scientific medicine is making great progress in preventing and curing many of the horrible diseases of the past—robbing them of their terror—the frequency of glaucoma is steadily increasing. Likewise defective vision and blindness as a direct result of this disease are also increasing.

Glaucoma is one of the old diseases known since the middle ages. It was even responsible for Milton's blindness. The cause of primary glaucoma is still unkown. It comes in two forms: First, acute inflammatory or congestive glaucoma, which is a most painful disease due to the rapid and sudden rise of intra-ocular tension. This type can sometimes be so malignant that vision can be destroyed in a few hours to a few days. The second type, known as non-inflammatory or simple glaucoma, is so insidious in its progress that the patient is often unaware of it until the vision of one eye is gone and the other seriously impaired. It comes like a thief in the night. It is therefore important that all of us be always on the look out for this disease.

Glaucoma is not due to infection, not to essential hypertension, neither is it a reaction to dietary or vitamin deficiency. The manifold prodromal symptoms of glaucoma, namely, eye discomfort, blurred vision, rainbow colors around lights, contraction of the field of vision, shallowing of the anterior chamber, cupping and atrophy of the optic disc, ending finally in blindness if not corrected, are due to one cause—increased intra-ocular tension.

The predisposing causes of increased intra-ocular tension are first hereditary and familial. For instance, I have seen the grandmother, the mother and the son affected at the same time. It is not unusual, in fact it is the rule, to see more than one member of the family affected at the same time. I have under treatment now, three persons in one family and four in another. It is said that certain races are predisposed to primary glaucoma. I seriously doubt this assertion. It is true that the small cornea and the shallow anterior chamber of certain individuals constitute an anatomic predisposition to glaucoma.

I believe that the disturbance of the sympathetic nervous system is an important factor. The general nervous system plays a part in the production of acute glaucoma. It is not unusual to see persons leading a normal life, whose intra-ocular tension is controlled easily by mild miotics, have a sudden flare up with increased tension following some emotional upset. Recently I saw a lady, whose tension had been easily controlled, have a

violent attack, with tension rising from 20 to 80 in a few minutes, due to the death of a near and dear relative. Fright, fatigue and irregular habits can produce acute attacks.

When you consider the nervous tension of modern life—speeding along at 60 miles an hour—you have the reason why glaucoma is rapidly increasing. All doctors, in consultation with patients who complain of symptoms referable to the eyes, should learn to take tension with the fingers. It is a simple matter and a little experience would give them good judgment. If the tension is elevated, the patient should be passed on to some one competent for treatment.

I will not go into the treatment of glaucoma, because that is a field in itself, but early diagnosis is a most important factor in staying the progress of the disease. In many cases, when the disease is first discovered, simple myoptic treatment may control the tension throughout life, maintaining a normal vision. When glaucoma becomes advanced, it becomes a surgical problem, therefore early diagnosis is most important.

Dr. Noel T. Simmonds (Alexandria): One additional point I would like to bring out is that usually cataracts develop in glaucoma. The name glaucoma is derived from a Greek word meaning green eye. The greenish reflection in the pupil is due to a sclerosing cataract. This sclerosing cataract, although a complication of the glaucoma, is frequently mistaken for the primary condition and the patients are told to wait until the cataract matures before consulting an ophthalmologist. Most of the time, in giving this advice the physician is right. However, unfortunately most of us have seen patients who have been advised to wait until the cataract matures and when they finally decide to consult an ophthalmologist we find that instead of having a simple cataract that the patient has a case of absolute glaucoma with a complicating glaucomatous cataract, for which nothing can be done.

Dr. Rudolph Matas (New Orleans): After hearing Dr. Blum's excellent paper I feel indebted to him and to the ophthalmic group for keeping us so interestingly and profitably in touch with the progress of oculistry in dealing with the problem of glaucoma—a subject of vital importance to us surgeons, who literally "live through our eyes."

Dr. Blum has stressed the insidiousness of the disease and the ease with which the early signs and symptoms of the subacute cases can be overlooked. Much good is being accomplished by widespread campaigns of the National and other societies organized for the prevention of blindness, saving many eyes in the same way that the present vigorous crusade against cancer is undoubtedly saving many lives by insisting on the importance of early and periodic examinations in order to help nip the disease in the bud. On the other hand much distress may be caused by errors in diagnosis as I know in the case of a young medical graduate who was driven to distraction and his career temporarily shattered when told that he had glaucoma on the basis of a deeply cupped optic disc. Nearly thirty years have elapsed since that time and his vision has remained essentially normal, despite the deep cupping of the disc—which has remained as a congenital defect. This however is no argument against the frequent periodic examination of the eyes by competent ophthalmologists who are now infinitely better prepared to make differential diagnoses than the usual glass fitters or optometrists who have had no training or experience in the pathology of the eye in its organic and systemic relations.

Better that the error should be by excess of caution than by failure to recognize the disease at a time when it may be remedied and blindness prevented. Better, a thousand times, that a benign tumor of the breast should be extirpated by an unnecessary radical operation than to allow a malignant growth to remain undisturbed in the assumption that it is a benign or innocent tumor.

Dr. Noel T. Simmonds (Alexandria): We who went to school under Dr. Matas were told that he was a specialist in every line. I feel that he has qualified in his discussion of glaucoma. We appreciate his discussion and his interest in our paper and we want to thank him on behalf of the eye, ear, nose and throat section.

Dr. Henry N. Blum (in closing): I know by long experience that after looking up books of reference you can get at last what you want by going to Dr. Matas. That is true about everything else, in medicine and in literature. What Dr. Matas says is perfectly true. Of course, even ophthalmologists make mistakes. We can be perfectly sure of our diagnosis if the patient is observed for a long time. I remember a case many years ago, an elderly woman who was observed for several years, and never at any time she was seen did she have increased tension, yet she had glaucoma. If her tension had been taken at the bedside, however at 5 a.m. instead of in the office at 10 and 11 o'clock, elevated tension would have been discovered. Then again we know that what may be normal for one eye may be abnormal for another.

There are other methods of making a diagnosis in glaucoma than by observation of the eye grounds and discovery of glaucomatous excavation and also by increase in intra-ocular tension. Field changes with a large tangent screen will reveal typical changes in the visual fields, if properly and carefully done, and, of course by repeated observations. We know that in some cases of glaucoma elevated tension cannot be discovered at any time and if we wish to find it we use means of stimulating the circulatory changes. We know that if we place some of these patients in a dark room

with the pupil dilated, it is more apt to show increased intra-ocular tension.

We sometimes can prevent establishment of glaucoma by treating patients early, if gotten in the pre-glaucomatous stage. But it cannot be cured by neglected treatment either operative or medical. If it is glaucoma, the patient will eventually go blind if he neglects his eyes.

CANCER OF THE LARYNX*

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AND
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There can be little disagreement with the statement that malignant disease is definitely increasing. Whether this increase is absolute or relative is a question which is still unanswered but the appalling fact remains as an obstacle to the progress of medicine. It is true that heart disease continues as the largest cause of death in this country but cancer now occupies second place in that grim listing.

Of all malignancies, about 4 per cent occur in the larynx and adequate warning is usually present but unfortunately this warning is too often pathetically ignored. Here, unrecognized early carcinoma is the more tragic when it is considered that the early lesion offers a larger percentage of cures than carcinoma occurring in any other organ of the body.

Clerf states that 40 per cent of the cases of cancer of the larynx are so far advanced when first seen by the laryngologist that no type of surgical operation can be offered them. Certainly something can be done to alter this deplorable situation; and it does not appear too sanguine to suggest that this could be achieved by comparatively simple means. This would involve the cooperation of three groups. The laryngologist, as the member of the movement with the gravest of the responsibilities, should so spread the gospel of early recognition of carcinoma of the larynx that all coming within his sphere will learn to recognize and respect its symptoms. The general practitioner, having been appraised of these symptoms should lose no time in urging laryngoscopic examination when such symptoms are present. And finally, the public at large should be made to develop its present state of cancer-consciousness to a higher degree to the end that it will seek early and frequent examinations.

Cancer of the vocal cord is a strictly localized disease which in its early stages spreads very slowly on account of the sparse lymphatic distribution at the anterior half of the larynx. Persistent hoarseness should make us suspicious of cancer of the larynx, but this does not imply that every case of hoarseness, or every lesion found within the larynx is a carcinoma. Tuberculosis and syphilis are frequently confused with cancer and must always be eliminated. An operation of the larynx should never be attempted without first performing a biopsy to establish and verify a diagnosis. In innumerable biopsies we have not seen any deleterious results consequent on this procedure. The clinical picture must be studied carefully and if it is suspicious of carcinoma, repeated biopsies may be indicated. Recently we had occasion to see such a case which clinically appeared to be carcinoma. However the pathologic report was chronic inflammation. It was not until the third biopsy was performed that we were able to obtain a report of malignancy. Had we accepted the first report the patient undoubtedly would have returned home feeling secure, only to be rudely informed at a later date that the condition had probably progressed beyond the stage where operation could be of any help. Carcinomatous lesions occurring in the larynx are necessarily seen in various stages of development and the method of operative approach advocated to eradicate the malignancy varies accordingly. On this basis we feel that an arbitrary division of these cases into four groups will simplify the classification.

The first group represents the earliest and most definitely limited of all the lesions encountered. In it are placed carcinomas confined to a small portion of the surface

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of one vocal cord. The tumor may be only slightly larger than a millet seed or it may be as large as a match head or a pea; but it is essential that normal tissue be observed on all sides. Such a lesion is generally seen on the free border of the cord, somewhere near the junction of the anterior and middle third. From these qualifications, it may be readily concluded that this group includes only a very special type of growth which unfortunately is not seen often enough because of delay in laryngologic consultation. When, however, it is encountered much can be offered. Cure of the disease without mutilation and usually without the necessity of occupational or social readjustment can be promised with only reasonable reservation.

We believe that with suspension laryngoscopy, growths fulfilling these requirements can be completely and successfully removed perorally by intralaryngeal dissection, following which electrocoagulation of the base may be employed as added insurance against recurrence. This method affords an adequate approach to the larynx; it is simple and safe (in most cases); it is as accurate as removal by means of laryngofissure; it is followed by very little postoperative reaction; and the vocal end result is superior to that obtained by any other method of operation for carcinoma of the larynx.

In advocating this approach, it is realized that many laryngologists are unalterably opposed to any form of peroral intralaryngeal operation in carcinoma of the larynx, but Figi, in a recent publication states that, "after cautiously using it and observing results during the course of a number of years, it can be heartily endorsed for use in a carefully selected group of cases." We wish to emphasize the last part of the quotation, "a careful selected group of cases." If this is not rigidly adhered to, the operation is doomed to failure.

Suspension laryngoscopy is the only method of direct laryngoscopy which, besides providing satisfactory visualization, makes it possible to use both hands in intralaryngeal manipulations; and bimanual operation must be employed for the successful extirpation of malignant lesions of the vocal cords.

When the larynx has been exposed, the tumor is grasped with a laryngeal fixation forceps and traction is made toward the median line. Traction toward the median line has a double purpose. It produces tension on the cord, making the incisions easier; and more important it provides a maximum view of the lateral extent of the cord which is necessary if a wide margin of normal tissue is to be removed together with the neoplasm. The amount of tissue to be removed having been decided upon, a sharp laryngeal knife is employed for the excision. This is immediately followed by electrocoagulation which, besides providing insurance against recurrence as has been previously mentioned, helps to control hemorrhage. If undue trauma has been avoided, the postoperative reaction should be negligible.

Formerly it was necessary to use chloroform anesthesia if electrocoagulation was to be employed. This was one of the objections to this method of operation. Since the development of pentothal-sodium, this objection has been removed. Pentothal-sodium is reasonably safe and produces sufficient relaxation for the proper performance of suspension laryngoscopy.

While suspension laryngoscopy is a compartively simple procedure in most cases, it must not be supposed that it can be accomplished with ease at all times. An "Andy Gump" chin or a short, stout neck certainly increases the difficulties and in some cases it is impossible to expose the anterior commissure because of some anatomic peculiarity. Should these circumstances offer sufficient obstacles to a completely adequate exposure of the lesion, laryngofissure should be performed. Twenty-six patients have been operated upon by this method with excellent results.

INTRALARYNGEAL DISSECTION (6 cases)

14 patients living and well in from 5 to 13 years

9 patients living and well in from 1 to 5 years

1 patient lived 3 years, recurrence, death

1 patient lived 6 years, pneumonia, death
1 patient lived 11 years, recurrence, death

Until a few years ago we adhered strictly to two methods of managing laryngeal carcinomas, the conservative and the radical methods. There was no middle ground between these extremes. The conservative method referred to intralaryngeal dissection under suspension laryngoscopy; while the radical method meant complete laryngectomy. In time it was realized more and more that there was a very definite place for an operative procedure that would fill this great gap existing between conservative and the radical operations. The answer to this was laryngofissure and its value is unsurpassed in those patients in whom the lesion is too extensive for intralaryngeal dissection and yet not quite extensive enough for laryngectomy. The results obtained are excellent and the voice good as a rule and as time goes on we are more and more enthusiastic about this procedure. In the second group, then, we include those cases of early cancer of the vocal cord which are either too far advanced or too unsatisfactorily located for operation by intralaryngeal dissection and yet offer reasonable hope of cure without the necessity of total extirpation of the larynx.

The ideal case is one in which the lesion involves the middle portion of the vocal cord with both ends uninvolved. The operation of laryngofissure which, of course, consists of splitting the thyroid in the midline, thereby exposing its interior, is a brilliant technical conception, relatively simple to perform. As time will not permit a discussion of the steps in the procedure, only a few statements on some points of interest will be offered. We have in general adopted the standard type of operation, preferring not to resort to tracheotomy or to excision of the thyroid ala. The operation is satisfactorily done under local anesthesia. An electric saw used too vigorously in cutting through an ossified thyroid may produce sufficient heat to destroy bone, resulting in sequestration. The thyroid cartilage in women may as a rule be divided in the median line by means of a knife. We have made it a routine procedure to use coagulation following the removal of the vocal cord. This, as a rule, controls postoperative bleeding. Some patients have developed granulation tissue which occasionally taxes our diagnostic ability as this tissue closely resembles a recurrence of the original lesion. Frequently it is necessary to remove this granulation tissue to provide adequate breathing space and to check up microscopically on the tissue removed. To date only 20 persons have been operated upon by this method. They have been carefully selected and the results obtained have been entirely satisfactory. It has been necessary to reoperate on three patients who had definite recurrences. Two of these patients responded to coagulation under suspension. The first is still well after four years; the second shows no evidence of further recurrence after one year. The other patient reoperated upon has again developed a recurrence and will probably require a laryngectomy. One patient developed perichondritis following radiation. Three patients developed excessive scar tissue in the larynx, producing signs of dyspnea. All three of these patients have required much attention because of dyspnea.

Into the third group are placed those cases which, although considered too extensive for laryngofissure, are yet confined within the cartilaginous structures of the larynx. To the latter portion of this stipulation may be extended some latitude. Tumors that have extended slightly beyond the borders of the cartilaginous structures or those exhibiting very early metastasis to the regional nodes may still be included in this division and operation by laryngectomy advised.

Lagging of the involved cord and certainly fixation of the cord are indications that the lesion is too far advanced for successful laryngofissure. Involvement of an entire cord or invasion across the anterior commissure with considerable involvement of both cords is likewise a contraindication to laryngofissure.

Formerly ether or chloroform was thought to be the only satisfactory anesthe-

tic for laryngectomy. While general anesthesia is still extensively employed for the operation, we have, for the past six years, used only local infiltration with novocaine and are convinced of its superiority. We feel that reasonably heavy preoperative sedation, in spite of arguments against it, is safe and it certainly adds to the ease with which the patient can be made to cooperate. During this six year interval it has been necessary to resort to a general anesthetic only once. This was in the case of a robust individual who, contrary to expectation, was made wildly excited by the preoperative sedative.

The old T incision has been discarded in favor of a simple midline division extending from just above the hyoid bone to the suprasternal notch. By making traction first on one side and then on the other, ample room has been furnished to carry out all of the necessary procedures. With the midline incision, closure is more easily accomplished and healing is far more rapid and uncomplicated.

The larynx is skeletonized by separately dividing the muscles at their attachment. The sub-perichondrial elevation as recommended by Crowe has been employed on several occasions but in our experience it has not facilitated skeletonization. Next, the trachea is severed. If possible this is done just below the cricoid cartilage. In cutting through the trachea a small tongue-shaped flap is dissected from the posterior tracheal wall. This is thought to be a very important step, for its proper utilization not only minimizes the possibility of drainage into the tracheobronchial tree, but it also produces a more generous mucosal area available for the formation of the tracheostomy.

As soon as the trachea is severed, it is lifted above the field to prevent the entrance of blood and a large rubber tube of approximately its same diameter is inserted into the lumen. Here the tube is firmly fixed by two or three large safety pins. The pins, held by heavy forceps are passed through and through to include both the trachea and the tube. This has a twofold purpose. It closes the trachea to the entrance of blood and it provides a means of traction upon the trachea which lifts it away from the larynx and elevates it from the level of any puddling of blood which could seep through an imperfect corking by the tube. Once this is accomplished, the opposite end of the tube is allowed to pass down the side of the table toward the head, where, away from the scene of action and acting as an airway, it can be observed by the nurse who is seated at the head of the table.

The larynx is dissected from below upward and when it is finally extirpated, every effort should be made to preserve as much of the pharyngeal mucosa as possible. A piece of merthiolated gauze is now packed through the defect into the pharynx which has been previously slightly anesthetized and it is allowed to remain in place during most of the pharyngeal closure. When this is almost complete, the pack is removed through the mouth and the feeding tube is inserted, following which the remaining defect in the pharyngeal wall is closed. Meticulous attention to this phase of the operation, we think, has materially lessened the incidence of fistula and secondary infection. At various times we have experimented with different suture materials, including black silk and cotton for closure of the pharynx but we have come to the conclusion that 0000 chromic gut on atraumatic needles is superior to any other material. A layer of muscle is brought over the suture line and adequate drainage is obtained by making bilateral stab wounds slightly above the upper border of the trachea and about two inches laterally. Rubber dam is introduced through the stab wounds and placed appropriately within the operative field. These drains are left in place for five or six days.

At this stage, after all bleeding points have been secured, a generous amount of sulfathiazole powder is sprinkled into the wound. This applies only to the last six cases, as prior to the time we saw them the drug was not in general use. We feel that

healing has been more rapid and drainage lessened in these cases.

We have borrowed a procedure from the general surgeon which has been of considerable assistance. After applying a layer of gauze over the wound, a large sea sponge is placed over it and this is bandaged tightly, thereby obliterating any dead spaces by maintaining constant pressure. This type of pressure bandage is continued for about three days.

By adhering to the above principles we have had a high incidence of primary healing and the few esophageal fistulas have not been very troublesome.

Until the wound is completely healed, no attempt is made to encourage the development of a buccal voice. Some patients have developed excellent voices, one appearing on Ripley's program. Those who have not been successful in acquiring a pseudovoice have been urged to use an artificial larynx and some of these have developed speech with uncanny ability. Only one case has been regrettable. A successful merchant from a small town was advised to use pad and pencil after his laryngectomy but to our consternation we were informed that he could neither read nor write—this despite his success in business! He has learned to whisper after a fashion and remains well from an operative point of view; but he is morose and is a cause of grief in his family.

Our observation is that the laryngectomized patients accept the problem of rehabilitation in a calm and determined manner, and in spite of their handicap they are a happy lot, thankful to be alive and anxious to do their bit in the world of today.

LARYNGECTOMIES (48 cases)

11 patients living and well from 5-10 years
23 patients living and well from 1-5 years
6 patients dead within 2 years after operation
2 patients dead within 2 years after operation
6 patients not answering questionnaire

Into the fourth group are placed those patients whose condition is too extensive for operation, the so-called extrinsic type of carcinoma. Unfortunately too many such persons are seen for the first time by the laryngologist and usually little can be offered these patients. Radiation may prolong life but often enough the complications of radiation therapy only add to the misery already present; as far as cure is concerned, the hope is too forlorn to offer much in that direction. But let this not be considered an indictment of radiation therapy in carcinoma of the larynx in general. While we are convinced that operation offers the greatest number of permanent cures in properly selected cases, the advocates of radiotherapy are providing sufficient evidence of success in similar circumstances to give their contentions careful consideration.

It is certain that if the general practitioner could more fully realize that life and death in carcinoma of the larynx depends upon an early diagnosis, a more conscientious effort would be made to arrange laryngologic consultations for all persons suffering from hoarseness. It has always been an ordeal to inform the family and in occasional instances, the patient himself, that a growth is too extensive for surgical removal. Each of you who has been through this knows the numerous questions with which the laryngologist is beseiged and it usually ends with the statement that if only the dangers and potentialties of persistent hoarseness had been known, a physician would certainly have been consulted much sooner.

CONCLUSION

Again, therefore, though the repetition be wearisome, let it be well remembered that persistent hoarseness is the one and only unfailing indication of early carcinoma of the larynx.

DISCUSSION

Dr. Mercer G. Lynch (New Orleans): The classification of carcinoma of the larynx into four groups has made the selection of the type of operation and treatment clear-cut and definite.

I would like to reemphasize the symptom of hoarseness in these cases. As clear-cut as abdominal swelling in pregnancy, projectile vomiting of brain abscess, loss of function of a limb following fracture; so, persistent hoarseness of six weeks may be taken to mean serious laryngeal disease until proved otherwise. If this is adhered to and if direct examination is insisted upon in all doubtful cases, there will be a good many false findings, benign or infectious growths encountered,

but those early cases will be diagnosed and receive attention during the stage when the most good with the least amount of operation and loss of time where the prognosis is optimism rather than pessimism. This is naturally a severe statement to make of all cases of persistent hoarseness but when one stops to think that 40 per cent of those patients seen are past the stage of laryngectomy, then I think such a procedure is justified.

The thought that 40 per cent of cases of carcinoma of the larynx that are seen are past the stage of laryngectomy is appalling. What is to be done with these patients—x-ray and tracheotomy and watchful waiting? The end of these patients is not pleasant. These are the so-called inoperable cases, and anything within reason that offers a possibility is to be accepted.

In these cases tracheotomy followed by laryngotomy, (opening the larynx by means of laryngofissure) followed by the implantation of radium, using large doses and supplemented with deep therapy to the glands of the neck, offers one means of helping these individuals. The procedure is drastic, there is a certain amount of sloughing which may be extensive, often radiation burns of the skin occur, but again this is accepted if the end results are justified.

The mortality rate is high as is to be expected in advanced cases of carcinoma, but in a series of 14 cases there have been 35 per cent who have lived beyond the year. Time will tell if all these are to have a five year cure. Nine died postoperatively or within the year from recurrence and metastasis. These are the cases of inoperable carcinoma where nothing much has been done in the past.

Again examine your hoarse patient with care that this figure of 40 per cent may be reduced.

Dr. Philip Bayon (In closing): We wish to emphasize the tremendous importance of careful and complete laryngoscopic examination in all hoarse patients, especially when they are in the cancer age.

Many patients, of course, will require only vocal rest or the simple removal of a benign tumor but some will undoubtedly be found who are suffering from malignant disease; and let it be remembered that early cancer of the larynx has a very good prognosis: advanced cancer, a hopeless outlook.

A CLINICO-PATHOLOGICAL STUDY OF DIABETES MELLITUS IN THE SOUTH

HUGO. T. ENGELHARDT, M. D.*
AND
FRANCIS E. BRUNO, M. D.*
NEW ORLEANS

We have been interested in inquiring into the clinico-pathological findings of individuals dying either from diabetes mellitus itself, or complications thereof, especially in the light of more adequate forms of therapy that are at the command of the modern physician.

Material for this survey was obtained from the protocols of individuals dying of diabetes mellitus at Charity Hospital from the years 1928 through 1941. During this period 101 diabetic patients came to autopsy. Fifty-one per cent of these were negroes, 38 being females and 13 males. This ratio of male to female was almost the same for the white race, there being 34 females and 16 males. The point to be emphasized, as revealed by the National Health figures,[1] is the marked predominance of diabetes in the female.

From July 1937 through June 1941, a total of 240,375 patients were admitted to Charity Hospital. Of this figure, 126,923 were white and 113,452 were colored. In this interval a total of 2067 diabetics were admitted; of these 1,245 were white and 822 were colored. These figures indicate that almost one-half again the number of white diabetics were admitted as colored which is out of proportion to the general hospital admissions. There were 209 diabetic deaths during this interval, of which 109 were white and 100 colored. These facts reveal that although the morbidity of diabetes in colored patients is less than that in whites, the disease and its complications are relatively more fatal in the negro.

CHART I

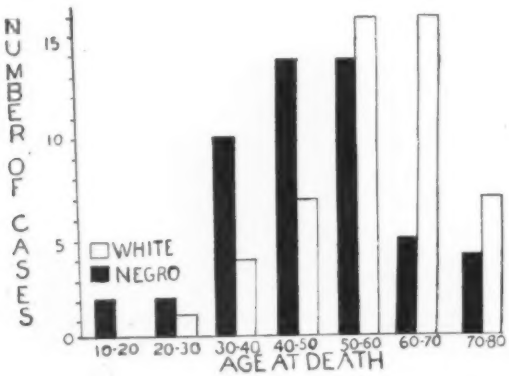
Admissions	Combined	White	Colored
July 1937-41.....	240,375	126,928	113,452
Diabetic admissions	2,067	1,245	822
Deaths due to diabetes July 1937-41	209	109	100

*These figures were obtained from Charity Hospital.

The average age of the entire autopsy series was 54.8 years, and when broken

*From the Department of Medicine, School of Medicine, Tulane University of La. at New Orleans, and Charity Hospital of La.

down as to race, revealed 49.8 years for the colored and 56.8 for the white. Dry and Tessmer[2] found the average age in Minnesota to be 59.5, which is more in agreement with the figures of the Metropolitan Life Insurance Co., which was 60.2 years in 1939. The apparent discrepancy in our figures may be explained by the fact that our series includes patients dying from 1928 to date. One definite point is that the average age of the negro dying of diabetes was six years less than the white. These results corroborate the findings of the Metropolitan Life Insurance Company.



It will be noted in Figure I that a greater per cent of the colored patients died before the fourth decade, while the majority of the white patients died after the fifth. Undoubtedly the intelligence and economic factors can explain the greater longevity of the white diabetics. It has been our experience in the diabetic clinics that colored patients are more apt to misunderstand the necessity for prolonged treatment and observance of diet.

COMA

Twenty-nine of the autopsy cases were in varying degrees of coma on admission or at sometime during their hospital stay. This figure is intermediary between the coma incidence of Wilder's 41 per cent and the 12 per cent reported by Dry and Tessmer. This inconsistency is due to the fact that a large number of the cases of the former series were in the pre-insulin era. The high incidence of cutaneous, urinary tract, and pulmonary infections certainly must have had a definite part in the development of coma in this series.[10]

GANGRENE AND CUTANEOUS INFECTION

Contrary to our clinical impression of cases in this category, there was an almost equal distribution between the negroes and whites. Lemann[3] in an analysis of 1111 diabetics in Charity Hospital admissions reported 124 cases of gangrene, an incidence of 11 per cent, in the interval 1921 through 1926. In his series 14 per cent of the whites and 21 per cent of the negroes had gangrene; he attributed this preponderance in the negro to poor hygiene in general and neglect of the feet in particular.

CHART II

Gangrene:		Subcutaneous abscesses of hands and feet	2
Foot	16	Paronychia (Tularemia)	1
Toes	3	Abscess of coccyx	1
		Inguinal adenitis	1
Carbuncles	12	Cellulitis of scalp	1
		Amputation of hands and forearms for sepsis	3

RESPIRATORY

It is worth emphasizing the frequency of suppurative pulmonary lesions listed below. Wilder[4] states that pulmonary abscess and gangrene have not been encountered among the cases of diabetes coming to his attention. We believe that the relatively high incidence in this series may be explained in two ways. First, that evidence of multiple suppurative lesions in many cases was due to a septicemia and secondly, that the high percentage of coma could have easily predisposed to aspiration of infected material.

Among the seven cases of pulmonary tuberculosis, only one was found to be active, these figures are essentially the same as those obtained by Himsworth[5] who found 15 tuberculous lesions in 230 consecutive cases.

CHART III

Pneumonia Lobar	6	Abscesses of lung	
Friedlander Pneumonia	1	Multiple	8
Bronchopneumonia	23	Solitary	5
Pulmonary edema	12	Tuberculosis	
Emphysema	1	Pulmonary	6
Atelectasis	2	Tracheobronchial lymph nodes	1
Gangrene right upper lobe	1	Infarction	1
		Suppurative	

Pleurisy with effusion		Tracheitis	1
Bilateral	4		
Unilateral	2		

CARDIOVASCULAR

The striking feature here is the relatively low incidence of arteriosclerosis in general and coronary sclerosis in particular. These figures are considerably less than reported by other writers.[2-3] There is work to show that season plays a highly significant role in the sclerotic complications of diabetes.[7-8] It is conceivable that the sub-tropical climate of southern Louisiana may modify the manifestations of arteriosclerosis.

This discrepancy can perhaps be further explained by the large proportion of negroes in our series. Coronary sclerosis was a relatively uncommon diagnosis on the protocols of the colored patients. Burch and Voorhies[6] in studying medical case histories at the Charity Hospital found a lower incidence of coronary occlusion in negroes, compared with whites; the incidence being 7 to 2.

Coronary occlusion occurred in males and females in a ratio which was almost 1:1, in this series. This is in agreement with the findings of Root et al who reported a higher incidence but a similar ratio. It has been observed in non-diabetics under the age of sixty, that occlusion is much less frequent in females.

CHART IV

Arteriosclerosis	52	Toxic myocarditis	1
Coronary sclerosis	24	Parenchymatous degeneration	1
Fatty heart	3	Coronary infarction	
Multiple abscess of heart	1	Old	11
Adhesive pericarditis	1	Fresh	2
Syphilitic carditis	1	Thrombosis left iliac vein	2
Atheromatosis of aorta	2	Thombophlebitis left leg	1
Interstitial myocarditis	1	Thrombophlebitis portal vein	1

GASTROINTESTINAL TRACT

In spite of the fact that the preponderance of our patients were females in the middle age group, we found a surprisingly low incidence of gallbladder involvement. Here again, race may play a part. In 326 proved cases of gallbladder disease from the same hospital, with the same proportion of admissions, we found that only 16.5 per cent of the total were negroes.

CHART V

Carcinoma of stomach	1	Cholecystitis with stones	3
Chronic gastritis	1	Chronic passive congestion of liver and spleen	3
Gangrenous appendicitis with general peritonitis	1	Ascites	1
Intestinal obstruction	1		
Cholecystitis	1		

URINARY TRACT

Ophüls[9] stated that four per cent of all patients coming to necropsy have an infection of the upper urinary tract. It has been shown that from 18 to 22 per cent of people dying of diabetes mellitus have infection of the upper urinary tract.[10] Our findings would tend to corroborate the fact that diabetics are very susceptible to urinary infections. The five cases of cortical abscesses emphasize the role that septicemia plays in diabetes. Moreover, it has been appreciated that the frequency and severity[10-12] of genitourinary infections may predispose to the development of coma.

CHART VI

Renal abscess		Renal infarction	1
Single	3	Pyelonephritis	9
Multiple	2	Glomerular nephritis	7
Bilateral hydronephrosis	2	Nephrosclerosis	22
Fatty degeneration of the kidneys	1	Acute cystitis	4
Horseshoe kidney	1		

The anatomic diagnoses, as they appeared on the autopsy protocols of the remaining systems, are tabulated below. It may be of interest to note the rather surprising fact that in the series of 101 cases, malignancy was found in only one instance.

Marble[13] states that there is evidence to indicate that cancer is more common in diabetics, admitting however that there are serious objections to this conclusion. The relatively lower average age of our series may mean that a sufficiently large number did not live long enough to develop cancer.

CHART VII

Endocrines	
Bilateral cortical edema of adrenal	1
Increased lipoid content of adrenal	1
Decreased lipoid content of adrenal	1
Adenomas of thyroid	1
Chromophobe adenoma of pituitary	1
Miscellaneous	
Toxic hepatitis	3
Fatty degeneration of liver	11
Central necrosis of liver	1
Pancreas	
Acute	1
Subacute	1
Chronic	3
Atrophy	6
Fibrosis	1
Hydropic degeneration	1
Lipomatosis	4
Estivo-autumnal Malaria	1
Central Nervous System	
Cerebral petechiae	1
Cyst of right basal ganglia	1
Multiple cerebral infarcts	1
Cerebral edema	5
Cerebral arteriosclerosis	1
Left cerebral infarct	1
Diffuse suppurative meningitis	2
Genital Tract	
Uterine fibroids	3
Endometrial polyp	2
Salpingitis	2
Hypoplastic endometritis	1
Hypertrophy of prostate	2
Prostatic abscess	1
Pyometria	1

SUMMARY AND CONCLUSIONS

The postmortem findings of 101 consecutive diabetic autopsies from the Charity Hospital of Louisiana are analyzed. This represents the number of diabetics coming to postmortem from 1928 to 1941. Of this total, negroes comprised 51 per cent. The average age of the colored diabetic at death was six years less than that of the white. An analysis of the general admissions and the diabetic deaths would indicate that for the negro, diabetes has a lower morbidity and a higher mortality rate.

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NEW ORLEANS
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SOME COMMENTS ON CURRENT CONDITIONS

The war moves apace. Our medical friends and colleagues have left or are leaving in large numbers to join the armed forces. The South, in proportion to the number of physicians who live there, has contributed many more men to the army and navy than any other sections of the country. Many of our cities, towns, and rural districts are suffering seriously from lack of physicians. The doctors who are remaining behind are working as they have never worked before. As an example, in one relatively small community with about fifty doctors, nearly half of these men have left to go into the services. One physician in this particular town, who has not delivered a baby for some five years, now has 150 maternity cases on his delivery list.

To the nurses who are in hospitals or engaged in private nursing, the National Nursing Council for War Services recommends that practically every nurse under forty, unless a supervisor or instructor in a nursing school, should serve in the Army or Navy Nurse Corps. The number of nurses and doctors who will be needed in the future is problematical. At the present time it seems to be that there will be a still further depletion of medical men and the trained auxiliaries to medical practice as the army grows larger. Incidentally, there has been considerable criticism among members of the medical profession relative to a continuation of the eight hour private duty restrictions. It is felt that in this time of emergency that the nurses could and should waive for the time being this more or less artificial limitation of active duty. Just at the present time there is a shortage of nurses, and there will be a still further shortage. Doctors are working over time in their practice as a contribution to present war conditions. They can not understand why the nurses are not likewise willing to make sacrifices. It does seem at the present day that every one is out to get all that he can for as little as he can put out. Unfortunately, we are seeing this happen right along in many of the war industries. If the war is lost it will not be eight hours a day, forty hours a week, it will be something drastically different.

Events change from hour to hour and from day to day in so far as the great training school for doctors in the South, the Charity Hospital, is concerned. After partial closure, Charity Hospital has re-opened for the month of August, and at the time of writing of these notes the probabilities seem to be that moneys will be found to continue the services of this great institu-

tion for the poor and needy, to carry on the instruction of large numbers of medical students needed for the national emergency, the training of nurses and nurses' aides, and especially the training of the men on the intern and resident staff, which men are scheduled in most instances to enter the army in a very short period of time. Illustrative of the general interest in this problem, and the special interest of the physician, are the three resolutions printed in the Louisiana news section of the Journal.

NATIONAL PHYSICIANS COMMITTEE

The National Physicians Committee has last week sent out a special bulletin to many of the physicians in the State. One of the plans suggested by this excellent, non-political, non-profit organization is to have the physicians interview the candidates for the House of Congress relative to their stand on such important questions as compulsory sickness or health insurance, and the status and rights of the profession.

The N. P. C. comments justifiably that now is the time to establish a sound legal foundation for organized medicine physicians. It is needless to point out that sooner or later, possibly sooner rather than later, compulsory sickness or health insurance, the first steps to socialized medicine, will be given birth in the halls of Congress. Now is the time to line up our State Congressmen to fight any such pernicious change in medical practice. It is repugnant to think that legislation will be introduced which will authorize the providing of medical care, supervised by laymen or by others than proper qualified medical men. Undoubtedly this is going to happen. We urge earnestly that those doctors who have received the bulletin of the N. P. C. follow out these suggestions. We earnestly urge that medical men acquaint the candidates for Congress of their feelings concerning the harm that may arise as a result of socialized medicine.

THE STANDARD NOMENCLATURE OF DISEASE AND OPERATIONS

The American Medical Association recently has issued a completely revised edition of this volume originally published in 1932. This present edition contains not only the standard nomenclature of diseases, but there has been added also the standard nomenclature of operations.

This book is a publication containing nomenclature common to every day medical terminology. A standard nomenclature should be used by writers regularly and should be employed at all times by hospitals and institutions which have to compile statistics and statistical data. Every hospital and every man interested in the scientific and uniform classification of disease and operations should make use of this relatively small volume prepared by a group of men who are in every way qualified for the undertaking.

NEUROCIRCULATORY ASTHENIA

The American Heart Association has issued a bulletin written by Paul D. White of Boston, which is particularly appropriate at the present time. The bulletin has to do with neurocirculatory asthenia, a condition recognized by DaCosta during the War Between the States, labeled by him the irritable heart and which was often designated in the last great World War as the effort syndrome and finally has come to be called neurocirculatory asthenia, frequently abbreviated N. C. A.

While this condition is by no means unusual in civilian life, nevertheless it is very much more frequent under the strain of war conditions. It develops not only in the soldier who is in active combat, but many a young man has broken down physically and psychically as a result of changing to an environment to which he is unaccustomed, and which in some unknown way definitely affects the nervous, the circulatory, and the muscular systems of the body. Nothing is definitely known concerning the mechanism of production of the condition. It is known, however, that it occurs most

often in young adults, preponderantly in males, who have a family history of nervous and physical disorders. All races may have neurocirculatory asthenia, but the more highly sensitive nervous Anglo-Saxon race is more prone to it apparently than are the more phlegmatic people.

The factors that precipitate neurocirculatory asthenia are many and varied. Infections, physical exhaustion, nervous prostration, and anxiety alone or in various combinations according to White may be associated with or accompanied by neurocirculatory asthenia. The condition is often labeled neurasthenia, or an anxiety neurosis, because of the commonly associated fear of heart disease.

The characteristic symptoms are indicated by the name of the condition. Nervous expressions are common, and they may be protean, and variegated from expressions as headache and diarrhea, to insomnia, and to what not. Circulatory symptoms are often outstanding. They may be subjective and to a lesser extent objective. Sensations the patients feel and complain of notably are dyspnea and palpitation. Often the patient has precordial pain usually in the left breast region, more persistent than the pain of angina pectoris and not as likely to radiate to the arms. The asthenia may be simply the feeling of tire and a fatigue after relatively slight physical effort, or it may be so pronounced that the patient actually does not have the strength to raise the fork and spoon to his mouth. This asthenia may come on with an abruptness which is outstanding. Soldiers have been observed who have gone into combat with heavy packs and rifles and who have had to be evacuated because actually they could not lift their guns to the shoulder nor could they walk.

The objective findings are by no means characteristic but often most suggestive. There is almost invariably tachycardia and a poor response to the exercise test. Occasionally there may be a functional murmur, but there is no enlargement of the heart and no organic murmur. These patients have cold moist hands; axillary perspiration is pronounced during the examination, even in a cold room perspiration may be running down from the axilla in streams; blood pressure may be elevated or unaffected. White does not mention the fact that often there is an absence of the corneal reflex and of the gag reflex, whereas the tendon reflexes are frequently exaggerated.

Unfortunately there is not much that can be done for these patients who are born with this physical inadequacy, in which the patients must learn to live within themselves and must adjust their lives, recognizing that their condition is a handicap but is not a serious disability. Much can be done with the soldier who has developed the syndrome acutely, physical re-education, mental readjustment, and freedom from the strain that has produced the syndrome. In other words, these soldiers who develop the syndrome can never and will never be combat troops. They will have to work in the service of supply and in the rear and take the best of care of themselves, leading a regular life, taking a certain amount of mild exercise, and avoiding the over use of tobacco, liquor, or caffeine preparations. There is no specific drug which will be of any value. It is needless to state that sedatives will often help to tide over the acute phases of the effort syndrome.

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TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

SEPTEMBER CALENDAR OF MEETINGS

Tuesday, Sept. 1—Eye, Ear, Nose and Throat Staff, 8 p. m.

Every Wednesday—Clinico-pathologic Conference, Charity Hospital Morgue Ampitheater, 1:30 p. m.

Every Thursday—Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m. Baptist Hospital, Executive Meeting, 8 p. m.

Monday, Sept. 14—Meeting of the Board of the Society, 8 p. m., Hutchinson Memorial.

Dr. Charles A. Bahn was recently elected deputy governor of the Toastmasters' Club of New Orleans.

Dr. Edward B. Faget was recently appointed as a member of the city health department's clinic staff.

Dr. Roy B. Harrison was appointed to membership on the National Board of Medical Examiners, for a four year term, at a recent meeting of this Board.

Drs. H. W. Kostmayer, Alton Ochsner and W. A. Sodeman recently spent two weeks in Venezuela studying hospitals of the Standard Oil Company, Venezuelan medical schools and pre-medical courses.

Dr. Chester A. Stewart was the principal speaker at the Olmsted ceremonies recently held in Rochester.

Dr. Frederick F. Boyce presented a paper on The Principles of the Treatment of Burns, with a Special Note on the Liver-Kidney Factor at the summer meeting of the Jefferson County Medical Society at St. Mary's Hospital in Port Arthur on July 13.

Drs. Edgar Hull, James D. Rives, J. H. Musser and Alton Ochsner recently attended a three-day course in the medical aspects of chemical warfare at the University of Cincinnati.

During the month of July thirty-one members were placed on the military rolls. They are as follows: J. J. Archinard, P. J. Bayon, Oscar Blitz, W. M. Boles, Irvin Cahen, L. S. Charbonnet, Jr., Stanley Cohen, Conrad G. Collins, Samuel H. Colvin, Jr., Peter Everett, I. M. Gage, Jack S. George, Paul L. Getzoff, Geo. M. Haik, John S. Herring, H. Reichard Kahle, M. H. Kaplan, C. Barrett Kennedy, Sam Levi, Mercer G. Lynch, Edward D. Matthews, C. J. Miangolarra, W. D. Norman, Chas. B. Odom, George F. Schroeder, Marvin C. Smith, Cosmo J. Tardo, E. Perry Thomas, G. C. Tomskey, E. Garland Walls, and R. M. Willoughby.

During the month of July the following physicians were elected to membership:

Active Membership

John F. Daniel, Maxwell F. Kepl and Donald B. Williams.

Associate Membership

Ira L. Schamberg.

The membership of the Society, as of July 31, 1942, is 652, of whom 513 are active members.

NEW ORLEANS GYNECOLOGICAL AND OBSTETRICAL SOCIETY

At a recent meeting of the New Orleans Gynecological and Obstetrical Society the following physicians were elected to office for the coming year:

Dr. J. W. Reddoch, president; Dr. Earl Conway Smith, first vice-president; Dr. Eugene H. Countiss, second vice-president; Dr. Edwin L. Zander, secretary; Dr. H. B. Alsobrook, treasurer; and Dr. Lucien A. LeDoux, additional member of the board.

NATIONAL PHYSICIANS COMMITTEE

The National Physicians Committee is fighting our battle for the preservation of medical service in the United States. At the recent annual meeting of the American Medical Association, held in Atlantic City, they approved unreservedly the work of the National Physicians Committee.

The Orleans Parish Medical Society approved a plan to make a financial contribution to the National Physicians Committee at this time. Therefore, the following have been appointed as representatives of each hospital in New Orleans to act as local agents for making a complete canvass of the doctors in the city:

Dr. Joseph W. Reddoch, Baptist Hospital; Dr. Leon Menville, Charity Hospital; Dr. Wm. B. Clark, Eye, Ear, Nose and Throat Hospital; Dr. A. V. Friedrichs, French Hospital; Dr. Daniel J. Murphy, Hotel Dieu; Dr. Edwin L. Zander, Mercy Hospital; Dr. S. M. Copland, Touro Infirmary; Dr. Clyde Brooks, L. S. U. Medical School; and Dr. John Musser, Tulane Medical School.

The work of the National Physicians Committee is of the greatest value and importance to all physicians at this critical time. They are doing heroic and effective work, looking far into the future, guarding against the deterioration of medical practice in the United States. The Committee is in great need of additional funds in order to carry on, in a thoroughly successful manner, the work which it has planned.

When your local representative calls on you please give him a statement of the amount you have already contributed to the National Physicians Committee, together with whatever contribution you can make within the next thirty days.

Clyde Brooke, M. D., Chairman,
Committee of the Orleans Parish Medical Society
on the National Physicians Committee.

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	

REPORT OF COMMITTEES ON NUTRITION

First, let us review briefly some of the developments leading to the compilation of this list of foods recommended for emphasis in the diet of the people of Louisiana.

As a civilian defense measure the Federal Government has undertaken to improve the well-being of the population of this country by dietetic instruction looking to a better food intake.

Following a national conference in Washington, various State and City Nutrition Committees were formed. After several preliminary steps, a Committee of the Orleans Parish Medical Society and later of the State Medical Society was appointed. The State Committee was selected in conformity with the following action of the House of Delegates at the last meeting of the Society:

1. That the Chairman of the House of Delegates of the Louisiana State Medical Society appoint a committee to collaborate with the Committee of the Orleans Parish Medical Society and with other agencies concerned with better diet programs in the schools and in welfare work, so that there will be uniformity in the recommendations submitted to the public by physicians, teachers, welfare workers and others concerned, and that these recommendations may come with the added force that they have met the approval of the physicians of this state.

2. That arrangements be made that these lists be available to all physicians at a moderate price, and that physicians be permitted to have them printed bearing their own names and that every physician in the state be urged to get one of these lists into the hands of every one looking to him for health, and that the importance of verbal explanations and instructions be emphasized.

Physicians are urged to have these lists printed, multigraphed or mimeographed, carrying their own names, or they may be secured (without their names) in any quantity desired from the Tulane University Press, Gibson Hall, New Orleans, at the following prices:

100	$0.75
500	$1.50
1,000	$2.25

LIST OF SOME HEALTH FOODS

MILK, cream, butter, buttermilk, cream cheese, cheese.

BREAD and CEREALS—Whole wheat bread, rye bread, vitamin enriched bread. Whole wheat cereals, wheat germ cereals, oatmeal, unpolished rice. Corn products (especially the yellow)—as meal and grits—when locally grown and freshly ground are good. Rice polishings and wheat germ cereals, when available, are excellent.

FRUITS (fresh)—Lemons, oranges, grapefruit, apples, apricots, figs, peaches, grapes, strawberries, fully ripe bananas, pineapple, watermelon, cantaloupe, avocado.

FRUITS (dried)—Apples, apricots, peaches, prunes.

VEGETABLES (raw)—Green lettuce, cabbage, parsley, water cress, tomatoes, tomato juice, carrots, green pepper.

VEGETABLES (cooked)—Carrots, pumpkins, yams, yellow squash, tomatoes, yellow corn, fresh or dried beans and peas (including soy beans), broccoli, brussels sprouts, cauliflower, spinach, all greens (mustard, turnips, collards, etc.), okra.

PROTEINS—Liver, beef, veal, mutton, lean pork, poultry, fish, sea foods, eggs.

DRESSINGS—Cream dressings and those made with salad oil, lemon juice, egg, etc.

NUTS—Pecans, peanuts, peanut butter.

GENERAL—Most fresh fruits, fresh vegetables, whole grain products, dairy products, fresh lean meats (including poultry and fish).

Committee of the Louisiana State Medical Society:

O. W. Bethea, Chairman,
H. E. Bernadas,
C. G. Cole,
M. D. Hargrove,
John Snelling,
Rhett McMahon,
C. A. Martin,
W. F. Couvillion.

Committee of the Orleans Parish Medical Society:
Oscar Bethea, Chairman,
Edgar Hull,
Chaille Jamison,
Randolph Lyons,
Daniel Silverman.

SOUTHERN MEDICAL MEETING

The usual plans are being made for the holding of the annual meeting of the Southern Medical Associaton to be held this year in Richmond, Virginia, November 10-12.

It will be noted that this year owing to the war the activities will occupy three days instead of the usual four days, but all of the program which has made this meeting so attractive will be carried out as heretofore.

Hotel reservations should be made through the Hotel Committee, Southern Medical Association, 109 North Fifth St., Richmond, Virginia.

C. H. WEBB TO SERVE AS ROTARY INTERNATIONAL OFFICER

Dr. Clarence H. Webb, a pediatrician and cofounder of the Children's Clinic in Shreveport, La., and a member of the Louisiana State Medical Society, took office in July as district governor of Rotary International, the world-wide organization which has more than 5,000 clubs with 210,000 members devoted to service to their communities and their countries. Dr. Webb is a past president of the Louisiana State Pediatric Society and of the Caddo Council of Social Agencies.

Unanimously elected at Rotary's recent convention in Toronto, Canada, by delegates representing Rotary clubs in more than 50 countries of the world, Dr. Webb will devote much of his time during his year in office to visiting the 46 Rotary clubs in Louisiana and Mississippi, which comprise the 139th district of Rotary International, and advising officers and committeemen on the activities of their clubs. He will serve as district governor until shortly after Rotary's 1943 convention in Philadelphia, Pa., in June.

PANAMA LECTURES

Dr. George E. Burch, Department of Medicine, Tulane, conducted a postgraduate course in internal medicine and cardiovascular diseases at the invitation of the Government of Panama the first part of August. The courses were given to the doctors of Panama at the Santo Tomas Hospital in Panama City. The program consisted of ward rounds, consultations, an introductory course in cardiography, and evening lectures which were given in the Gorgas Memorial Institute and were attended by the Panamanian physicians and the American doctors stationed in the Canal Zone.

AMERICAN COLLEGE OF CHEST PHYSICIANS

We are pleased to notify you that Dr. Louis A. Monte, New Orleans, has been re-elected as a Governor of the American College of Chest Physicians at the annual meeting of the College held at Atlantic City, June 6-8, 1942.

NEWS ITEMS

Dr. C. M. Horton, Franklin, has recently been appointed to the Louisiana State Board of Medical Examiners in place of Dr. R. W. O'Donnell of Monroe who died.

Dr. J. A. Tucker, Baton Rouge, has been appointed physician and surgeon to the Louisiana School for the Deaf. Dr. Tucker previously served in this same capacity from 1916 through 1920.

Dr. Lucien A. LeDoux, Councilor from Louisiana of the Southern Medical Association and Member of the Executive Committee of the Council, recently attended an Executive Meeting of the Council of the Southern Medical Association which was held in Richmond, Virginia.

Assistant Surgeons Jack W. Hannah, Robert W. Rasor, Jack A. End, and Lloyd B. Flint have been ordered to the United States Marine Hospital for duty. Assistant Surgeon David S. Ruhe has been ordered from New Orleans to the United States Marine Hospital at Savannah, Ga.

An ethical, well trained physician, who is a member of our organization, desires to practice in New Orleans and would like to take care of the practice of a physician called into military service until his return. If you have information concerning such a practice kindly communicate with the Journal.

Louisiana led all the states in the Southern recruiting division during last month, in enlistments in the United States Marine Corps, Captain Charles S. Williamson, III, officer in charge of recruiting, announced today.

The United Fruit Company announces that it has made provisions so that all children suffering from celiac disease will receive priority for necessary supply of bananas, despite the present shortage of bananas brought about by the U-boat activity in the Caribbean.

ACTIONS CONCERNING THE CHARITY HOSPITAL

Illustrative of the interest taken in the Charity Hospital, there are appended here the telegram to Governor Sam Jones, a resolution by the Orleans Parish Medical Society, and a resolution of the

Executive Committee of the Tuberculosis and Public Health Association of Louisiana.

TELEGRAM TO GOVERNOR JONES:

Realizing the grave emergency of the situation facing the Charity Hospital of Louisiana at New Orleans, and the absolute necessity of immediate action to prevent the closing of this great Institution, we respectfully urge that you call the Legislature into session at the earliest possible moment in order that some immediate and satisfactory solution for the financial plight of Charity Hospital may be found.

If an immediate solution of these problems is not found, the Charity Hospital will lose the members of its resident and intern staff, the entire body of under-graduate students of the School of Nursing at Charity Hospital, as well as many skilled and technical employees. Under present conditions these positions can not be refilled and the loss of this personnel would, of a necessity, mean the closing, for a long period of time, of the Charity Hospital.

The operations of the Medical Department of Tulane University, the Medical Department of the Louisiana State University, and the Dental Department of Loyola University, would be very greatly handicapped.

Should this Hospital close, and its patients return to their homes, serious public health problems would inevitably occur through the spread of communicable disease.

The Pasteur Clinic would have to be closed, the venereal disease program would be seriously interferred with, the treatment of cancer cases discontinued and the countless thousands of the poor of Louisiana, who, for over 200 years, have looked to this Hospital as their only haven in times of sickness, would have no where to go.

Louisiana's contribution towards the National Defense would be interferred with—doctors and nurses could no longer be trained in this institution.

Should the horrors of war come to Louisiana, this institution is the only Hospital in Louisiana equipped to care for emergencies of such magnitude.

For these and many other reasons, we respectfully urge immediate action by the governing bodies of the State of Louisiana, and respectfully request a solution of this problem at the earliest possible moment.

Dr. Emmett L. Irwin, President, Louisiana State Medical Society
Dr. Edgar Burns, President, Orleans Parish Medical Society
Dr. H. W. Kostmayer, Dean, School of Medicine, Tulane University
Dr. B. I. Burns, Dean, School of Medicine, Louisiana State University
Dr. Sidney Tiblier, Dean, Department of Dentistry, Loyola University
Dr. Urban Maes, Head of Department of Surgery, Louisiana State University
Dr. Edgar Hull, Head of Department of Medicine, Louisiana State University
Dr. J. H. Musser, Head of Department of Medicine, Tulane University
Dr. Alton Ochsner, Head of Department of Surgery, Tulane University
Dr. Val H. Fuchs, Chief of Emergency Medical Service, Office of Civilian Defense
Dr. E. L. Leckert, President, Catholic Physicians' Guild
Dr. O. P. Daly, Director, Charity Hospital of Louisiana at New Orleans.

RESOLUTION OF THE ORLEANS PARISH MEDICAL SOCIETY:

At a special meeting held on July 30 at 8:00 p. m. in the domicile of the Society at Hutchinson Memorial, the Orleans Parish Medical Society wishes to go on record as opposing unanimously the closing of the Charity Hospital in New Orleans.

A medical calamity of such magnitude has never before befallen Louisiana, the South nor any other section of our country.

The Charity Hospital of New Orleans with its two hundred years of faithful unfaltering service to the poor is a monument not to be excelled in any section of our nation.

The doctors of the Orleans Parish Medical Society proudly claim that their services in a large measure have helped to build this great institution. As we labored to build it for the poor it is our obligation to preserve it for them. It is our duty and privilege to protect those helpless inmates who cannot protect themselves.

With a full realization of the high responsibility that is ours we urgently petition the people of New Orleans, the State of Louisiana and especially our elected representatives holding official positions of honor and trust in our city and state governments to halt at once this ugly hand of injustice that has already caused great suffering and now threatens tens of thousands with unpredictable misery and many with death.

The Orleans Parish Medical Society does not presume to judge those who are guilty, who have failed the sick and the poor in this, their hour of peril and greatest need; however, it does in no uncertain terms condemn the closing of Charity Hospital of New Orleans as an act entirely preventable. It is unjustifiable and unpardonable!

In the name of justice to the poor, sick and cripple of Louisiana; in the name of justice for the protection of this community in the event of a local civilian disaster; in the name of justice to national defense in the training of doctors and

nurses we demand the continuation of the services of Charity Hospital of New Orleans.

Respectfully submitted,
Edgar Burns, M. D., President
Edwin L. Zander, M. D., Secretary.

RESOLUTION OF THE TUBERCULOSIS AND PUBLIC HEALTH ASSOCIATION OF LOUISIANA:

WHEREAS, the Legislature of the state in its regular session of 1942, recently closed, failed to provide means for raising the necessary funds to finance the splendid program it adopted for the coming biennium, and

WHEREAS, studies made by interested and qualified citizens of the state since the closing of the regular 1942 session have shown that there is no prospect of obtaining sufficient revenue from income in sight, and

WHEREAS, the chief sufferers from the unbelievable situation in which the state finds itself are the sick and poor who through no fault of their own are dependent on the charity of the state

BE IT RESOLVED that we, the Executive Committee of the Tuberculosis and Public Health Association of Louisiana, a non-partisan group of volunteers—medical and lay representatives of the entire state, do in quarterly meeting assembled, urge upon the Governor, Honorable Sam H. Jones, that he call immediately a special session of the Legislature for the purpose of passing laws to provide funds to continue to finance:

1. The Charity Hospital of Louisiana at New Orleans which during the 2-year period ending December 31, 1941 treated 127,914 patients, maintaining a daily average population of around 2,500. The printed record shows that these patients came from every parish of Louisiana—approximately 45 per cent of the general hospital patients coming from outside New Orleans, while of the tuberculosis patients the figures are reversed with approximately 55 per cent of the patients coming from other parishes, Charity Hospital, New Orleans, treating approximately 70 per cent of all indigent tuberculosis patients of the entire state;
2. The State Department of Public Welfare which was likewise left without funds to operate for the relief of thousands of our citizens dependent upon it; and
3. Schools and other agencies left without adequate support for the biennium.

BE IT FURTHER RESOLVED that the Legislature be urged specifically to re-enact H. B. 361 to provide 400 emergency beds and other additional tuberculosis facilities for the state and that the $940,000 called for to put it into effect for the biennium be included in any funds to be raised, and

BE IT FURTHER RESOLVED that we urge each member of the Legislature to pledge himself to forget factional differences and consider at this session only the rights of the needy of the state, to the end that there will be no adjournment until adequate funds are provided to implement the bills already passed or to be passed. Furthermore, that such legislation be enacted as will make impossible the recurrence of the situation in which the state finds itself at this time.

BE IT FURTHER RESOLVED that a copy of this resolution be sent to the Governor and to each member of the Legislature with a covering letter.

Tabulation by parishes of patients treated at Charity Hospital, New Orleans, during two-year period, 1940-1941.* Tuberculosis patients included in these figures, no separate statistics being available.

Acadia	312
Allen	303
Ascension	1,911
Assumption	1,157
Avoyelles	1,160
Beauregard	88
Bienville	23
Bossier	7
Caddo	66
Calcasieu	704
Caldwell	99
Cameron	35
Catahoula	95
Claiborne	11
Concordia	154
DeSoto	20
East Baton Rouge	4,343
East Carroll	284
East Feliciana	705
Evangeline	295
Franklin	173
Grant	106
Iberia	790
Iberville	1,545
Jackson	37
Jefferson	7,138
Jefferson Davis	284
Lafayette	283
Lafourche	2,757
LaSalle	81
Lincoln	28
Livingston	1,119
Madison	284
Morehouse	196
Natchitoches	90
Orleans	70,600
Ouachita	282
Plaquemines	906

*Figures from State of Louisiana Department of Institutions, Biennium Report for the period ending June 30, 1942.

Pointe Coupee	977
Rapides	423
Red River	8
Richland	170
Sabine	85
St. Bernard	1,333
St. Charles	1,347
St. Helena	298
St. James	1,332
St. John	1,687
St. Landry	1,021
St. Martin	190
St. Mary	1,456
St. Tammany	3,176
Tangipahoa	4,847
Tensas	142
Terrebonne	3,729
Union	39
Vermilion	337
Vernon	73
Washington	3,314
Webster	25
West Baton Rouge	521
West Carroll	93
West Feliciana	347
Winn	108

MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

Medical supplies and instruments valued at $200.00 were contributed by the Women's Auxiliary of the Shreveport Medical Society of Louisiana to the Medical and Surgical Relief Committee of America, Dr. Marjorie E. Reed, Chairman of Women's Activities announced.

The supplies were sent to Committee headquarters at 420 Lexington Avenue, New York City, and consigned to Great Britain.

CONGRESS OF COLLEGE OF SURGEONS

The 1942 Clinical Congress of the American College of Surgeons, originally scheduled for October at the Stevens Hotel, Chicago, which was taken over August 1 by the United States Army Air Corps, will be held in Cleveland, with headquarters at the Cleveland Public Auditorium, from November 17 to 20. The twenty-fifth annual Hospital Standardization Conference sponsored by the College will be held simultaneously.

The program of panel discussions, clinical conferences, scientific sessions, hospital meetings, and medical motion picture exhibitions at headquarters, and operative clinics and demonstrations in the local hospitals and Western Reserve University School of Medicine, has been centered around the many medical and surgical problems arising out of the prosecution of an all-out effort to win the war, emphasizing the needs of the rapidly expanding medical services of the Army and the Navy, and consideration of special problems related to the increasing activities for civilian defense.

The program of both meetings will begin with a Joint General Assembly on Tuesday morning, November 17, with addresses by Surgeon General James C. Magee of the Medical Corps, United States Army; Surgeon General Ross T. McIntire of the Medical Corps, United States Navy; Surgeon General Thomas Parran of the United States Public Health Service; Lieutenant Colonel George Baehr, Chief Medical Officer of the United States Office of Civilian Defense; Dr. Frank H. Lahey, Chairman, Directing Board, Procurement and Assignment Service; Dr. Irvin Abell, Chairman of the Board of Regents of the College and Chairman of the Health and Medical Committee of the Federal Security Agency; and Dr. W. Edward Gallie of Toronto, President of the College. The surgeons general and Colonel Baehr will also speak at the Presidential Meeting and Convocation the same evening.

VENEREAL DISEASE CONTROL

A conference under the auspices of the United States Public Health Service having to do with Venereal Disease Control in War Time will be held in conjunction with the Eighth Annual Meeting of the American Neisserian Medical Society at Hot Springs National Park, Arkansas, October 21-24. A distinguished list of people from all over the United States is scheduled to appear on this program. The names of the speakers are well known to all those interested in the numerous and many problems of venereal disease.

MISSISSIPPI VALLEY MEDICAL SOCIETY

The Eighth Annual Meeting of the Mississippi Valley Medical Society will be held at Quincy, Illinois, September 30 through October 2. An attractive program has been prepared. Amongst those attending will be Dr. Edward H. Cary, former president of the American Medical Association as well as the presidents of the Illinois, Iowa and Missouri State Medical Societies.

INFECTIOUS DISEASES IN LOUISIANA

For the week ending July 18, the following diseases were reported to the Section of Epidemiology of the Louisiana State Board of Health in numbers greater than ten. There were listed

in this particular week 536 cases of syphilis, 37 of gonorrhea, 36 of bacillary dysentery, 31 of pulmonary tuberculosis, 28 of malaria, 12 each of whooping cough and septic sore throat, and 11 each of typhus fever and measles. The 36 cases of bacillary dysentery were all reported from Jackson Parish where an unusual outbreak occurred. For the following week which ended July 25, there were again listed a good many cases of syphilis, 452 in all, followed by 103 cases of gonorrhea, 24 each of malaria and pulmonary tuberculosis, 19 of bacillary dysentery, 14 of typhoid fever, and 12 of whooping cough. There were three cases of poliomyelitis listed this week, one each from Calcasieu, Franklin and Rapides Parishes. Six cases of typhus fever appeared on the summary for the week, three occurring in Vernon Parish and one each in Assumption, Orleans and Tangipahoa. Thirty-six of the cases of gonorrhea and 21 of syphilis were reported from army camps. For the week closing July 31, there were found to be 324 cases of syphilis, 108 of gonorrhea, 39 of malaria, 24 of bacillary dysentery, 17 of pulmonary tuberculosis, 13 of typhoid fever. Three additional cases of poliomyelitis were recorded this week, one each from Caddo, Vernon and Orleans Parishes. The malaria cases came almost entirely from Jackson Parish. The typhoid fever cases were scattered one to a parish except in Winn Parish where there were eight cases. Three additional cases of typhus fever were also recorded this week. For the week which terminated August 8, there were 470 cases of syphilis appearing in the weekly morbidity reports, followed in order of frequency by 36 of gonorrhea, 29 of malaria, 23 of pulmonary tuberculosis, 11 of septic sore throat, and 10 of typhoid fever. The malaria cases again came mostly from Jackson Parish, 16 in all, with seven coming from Ouachita. One case of poliomyelitis was listed this week, and one of typhus fever. The typhoid fever patients were scattered all over the state, no parish having more than West Carroll, which had three cases.

HEALTH OF NEW ORLEANS

The Bureau of the Census, Department of Commerce, reports that for the week ending July 18, 1942, there were 124 deaths in the City of New Orleans, divided 84 white, 40 negro. During this week there were only five deaths in children under one year of age. In the week which terminated July 25, the 119 deaths in the city were grouped 73 white, 46 negro, with a most remarkably few deaths in this very hot week of the summer in children under the age of one, only two small babies succumbing in this particular week. The following week, which ended August 1, there were 127 deaths in the city, 88 were in the white and 39 in the negro race. The infant mortality rate this week was more nearly normal for the time of year. There were 15 infant deaths, 12 of which were white and three negro. In the year 1942 there have been only 316 infant deaths as contrasted with 396 in 1941 for the first 30 weeks of the year. It might be observed also that there have been nearly 200 less deaths in the city in 1942 than there were in the corresponding 30 weeks of 1941. For the week which ended August 8, the number of deaths in the city was extremely low, only 92 of the citizens of New Orleans succumbing in this particular week as contrasted with the three year average for the corresponding week of 144 deaths for this week. In the week ending August 8, 64 of the deaths were in white and 28 in the negro population of the city, and only seven of these were in children under one year of age.

THE GEOGRAPHIC DISTRIBUTION OF DEATHS FROM INFECTIOUS DISEASES LOUISIANA 1940

The accompanying map gives a 1940 distribution in Louisiana, according to parish of residence, of deaths from infectious diseases other than tuberculosis and syphilis (International List of Causes of Death).

Two or possibly three areas stand out because of markedly different death rates. The extremely high rate observed in Iberville is due to 39 deaths occurring in the leprosarium at Carville. Omitting these deaths from leprosy, the rate for Iberville is reduced to 82.7 deaths per 100,000 population; consequently, it is probable that Iberville should be included in the middle group rather than in the highest group.

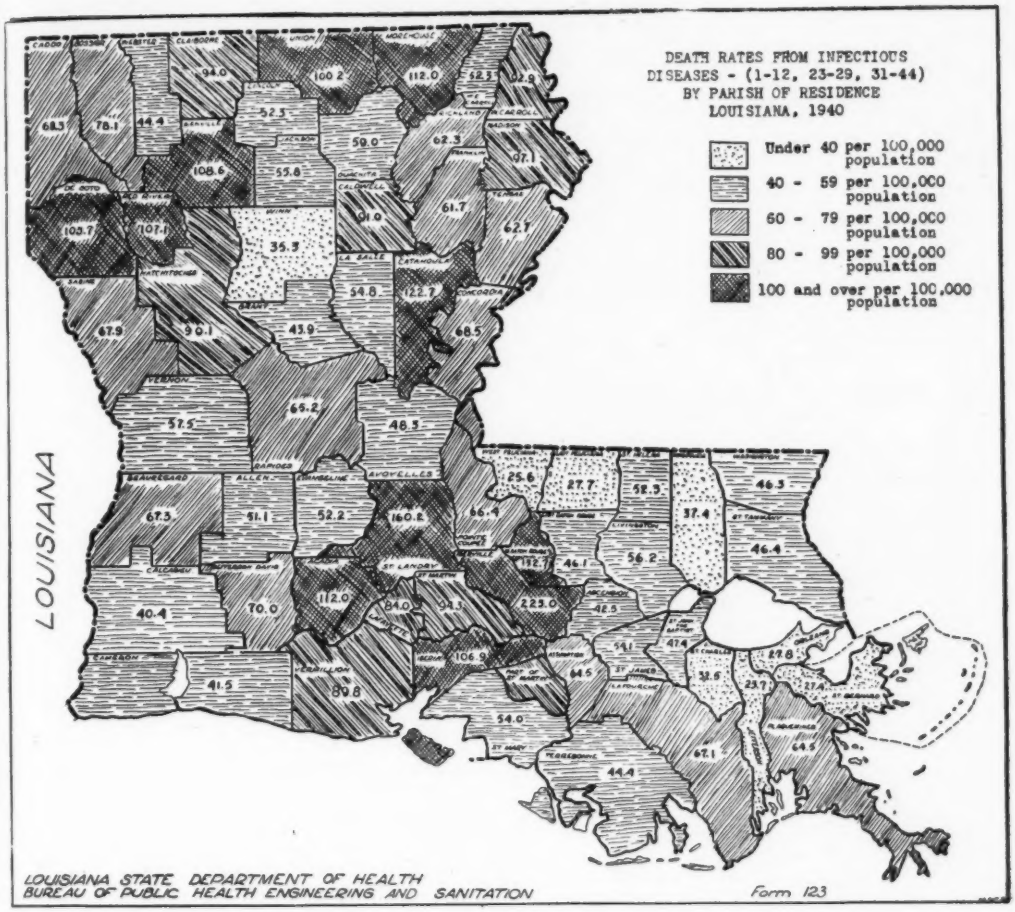
The area of low death rates, in general, touches on Lake Pontchartrain. The middle rate occurs in a rather ill defined area that might be said to be the balance of the state.

Before interpreting these rates, several factors should be considered.

First, the death rate for the infectious diseases is higher for negro than for white: respectively 89.2, negro, and 48.9 white. To see whether or not the distribution pictured was a function of the per cent of negro and of white population, these data were analyzed separately and it was concluded that in the high and low death rate areas, race distribution was not a factor.

Second, analysis on the basis of percentage distribution between rural and urban* populations shows the highest rates in those parishes having predominantly rural populations.

*The Census Bureau defines the urban population as including inhabitants of all cities over 2,500. The remaining population is classified as rural.


DEATH RATES FROM INFECTIOUS DISEASES - (1-12, 23-29, 31-44) BY PARISH OF RESIDENCE LOUISIANA, 1940
Under 40 per 100,000 population
40 - 59 per 100,000 population
60 - 79 per 100,000 population
80 - 99 per 100,000 population
100 and over per 100,000 population
LOUISIANA
LOUISIANA STATE DEPARTMENT OF HEALTH
BUREAU OF PUBLIC HEALTH ENGINEERING AND SANITATION
Form 123

When examining the map, the southeastern region of the state is divided into two areas of widely differing death rates,—east of the Mississippi, an area of low death rates, while west of the Mississippi is an area of high death rates. Reasons for this difference are obscure. It is difficult to attribute these to public health agencies because some of the southeastern parishes have no full-time health services. The economic characteristics of the regions differ considerably. Truck farms predominate east of the river while in the region of higher deaths, large plantations are prevalent. Population characteristics differ also: Unlike the Florida parishes, east of the river, the Acadian parishes, west of the river, have many persons of French descent. Physical characteristics are markedly different: the Florida parishes are a hilly pine woods area; the Acadian parishes are considerably lower. It is difficult to attribute the difference in rates to physical characteristics alone since not all of these characteristics are peculiar to the whole of the two areas.

To eliminate the possibility that factors peculiar to the year 1940 were responsible for the unusual rates in these areas, a tentative map of 1941 figures was made, but the areas were apparently the same. Although no definite explanation of these different areas can be offered, their very presence may be taken as an indication of a public health problem which should be of interest to Louisiana public health workers. (Bulletin from the State Department of Health).

BOOK REVIEWS

Synopsis of the Preparation and After Care of Surgical Patients: By Hugh Calvin Ilgenfritz, M.D., and Rawley Martin Penick, M.D., St. Louis. C. V. Mosby Company, 1941. Pp. 532, illus. Price, $5.00.

The key to the contents and purposes of the authors is indicated in the foreword by Urban Maes, in the following sentence: "The successful outcome of a surgical procedure often depends largely upon the proper preparation of the patient for the operation."

Maes further points out that controversial material has been omitted from the work. From the above statements one is led to expect that the contents of the volume are based on clinical experience, judgment, and evaluation of the best practices adopted in the management and care of surgical patients.

After a careful reading of the volume it is a pleasure to state that this little volume will fill a long felt want. It will be a useful guide for the occasional operator who needs a ready reference work. It is a volume which should be in the hands of every intern and resident in a hospital. It is an excellent text book for Junior and Senior medical students.

By careful editing, controversial matters have been eliminated as far as possible, and at the same time the authors have appended to each chapter an excellent bibliography which should make additional reading profitable.

Each chapter is well rounded and it would be difficult to pick out outstanding portions of the book without making the review too long. The print is excellent, the size of the volume makes it easily handled.

It is a pleasure to be able to recommend that this volume be used as a text for students and members of resident staffs. Each of the authors is to be congratulated on the splendid results of his labor.

This volume is a credit to the community from which it comes. If it obtains the reception which it deserves, it will go through many printings in a very short time.

ISIDORE COHN, M. D.

Diabetes Mellitus: By Wirtschafter and Korenberg. Baltimore, Williams & Wilkins Company, 1942. Pp. 186. Price, $2.50.

This monograph by Wirtschafter and Korenberg is a well organized study of the diabetic process. It is terse, clear, and a rather complete account of the fundamentals of carbohydrate, protein, and far metabolism. Approximately four-fifths of the book is given over to a discussion of the chemistry, physiology, and pathology of the diabetic process. The two final chapters deal with clinical diabetes and diabetic coma respectively.

While this book cannot compare in comprehensiveness to the larger, standard texts, it does fulfill a place as an introduction into the complexities of diabetes mellitus.

ROBERT A. KATZ, M. D.

Immunology: By Noble Pierce Sherwood. 2nd ed. St. Louis, The C. V. Mosby Company, 1941. Pp. 639, illus. Price $6.50.

This work covers the same field as the first edition and is designed primarily for medical students. The fundamentals of immunology, considered from the standpoint of basic concepts, have been brought up to date and rearranged so that they can be outlined more readily by the student. Two new chapters appear, one on the reticuloendothelial system, the other on serum reactions. As was the case with the first edition, it may again be stated that the author's views do not distort the evidence for or against theoretical considerations, a sound attitude in a field where theories abound.

The references at the end of each chapter, a commendable feature in the first edition, have been brought up to date.

W. A. SODEMAN, M. D.

Psychiatry In Medical Education: By Franklin G. Ebaugh, M. D. and Charles A. Rymer, M. D. New York, The Commonwealth Fund, 1942. Pp. 619. Price, $3.50.

Amazing talent and knowledge, possessed perhaps by no other American psychiatrist than Dr. Ebaugh, is required to design and produce such a book as this one.

Material for this excellent analytical report was obtained from many diverse sources and consolidated into a review and reconsideration of the philosophy, practices, objectives and achievements of psychiatry in this country. It was prepared as a service guide to psychiatrists and educators, and is a unified effort to assist them in keeping abreast of the problems of psychiatric teaching and the methods employed to solve them.

The authors suggest that one of the greatest weaknesses in present-day psychiatry lies in the *quality* of psychiatrists, who too often are poorly trained, bound by ideas of the general hopelessness of mental illness, are uninterested in improving these matters, and lack self-understanding and a forward-looking and investigative attitude. No reasonable person can risk the assumption that existing conditions and facilities will remain unaltered. We must be prepared to deal with

emergencies. This is especially true in the field of medicine, where the ability to meet adequately an emergency may mean the difference between life and death.

Perhaps Drs. Ebaugh and Rymer's book will help doctors to have an appreciation of the emotional and social aspects of disease, to recognize personality disorders in children, and to secure a workable understanding of the clinical, therapeutic, and public health aspects of mental illness.

All of us must learn to "add it up—strike a sum—think it through"—for old attitudes no longer serve.

C. P. MAY, M. D.

Vascular Sclerosis: By Eli Moschcowitz, New York, Oxford University Press, 1942. Pp. 178, illus. Price $3.75.

This monograph is a little gem and is particularly appropriate at the present time in view of the increased interest aroused, largely by Goldblatt's investigations, in the subject of hypertension and arteriosclerosis. It was written by a man who is both a clinician and a pathologist, a man who has been interested for many years and has written extensively on the subject of arteriosclerosis.

The author maintains that the earliest changes of arteriosclerosis are those within the intima, beginning at birth, and that the subsequent changes progress with greater or lesser activity in different individuals. Basically the rapidity of the pathologic changes are in direct relationship to the height of the blood pressure. He holds that this elevation of blood pressure is the actual cause of the aging process that takes place in the vascular system and that other causes may be and should be considered as contributory rather than fundamental. In the greater circulation the author describes the various mechanisms associated with increased tension in this major vascular system, such as psychic reactions, renal disease, adrenal tumors, as well as three or four other factors that may increase the blood pressure; basically the histologic changes that develop in the condition known as arteriosclerosis are due to a mechanical cause, that is, increased pressure within the blood vessel. Moschcowitz produces an equation suggesting the importance of hypertension—it is: arteriosclerosis = intravascular pressure x time.

While in accord with most of the context of the book, the reviewer would differ rather emphatically with the idea that the factor of heredity plays a small role in the genesis of hypertension. It is a concept which is quite unusual. Even Oliver Wendell Holmes expressed the importance of heredity and writers of this present day do the same. Moschcowitz holds that the matter is by no means settled of course, but that if the clinical expressions of arteriosclerotic disease are common in certain families it is the result of environment rather than heredity. Substantiating evidence is brought forth that hypertension implicates commonly the negro race is not by any means a good argument. It is true that hypertension is common in the American negro and is uncommon in the wilds of Africa, but there has been considerable infiltration of white blood into the American negro, and in the African tribes death is so common in early and midlife that but few live to an old age and if they do they are probably the ones who did not develop arteriosclerotic disease.

Although arteriosclerosis in this book on vascular sclerosis is referred to especially and there is considerable space devoted to its pathology and pathogenesis, etiology, prognosis, not to forget a very well balanced chapter on treatment, nevertheless it also contains chapters on capillary sclerosis, Monckeberg's sclerosis, phlebosclerosis, as well as sclerosis of the minor circulation of the lungs. The medical man who reads this monograph will have placed before him a summary of the most recent thoughts and studies concerning arteriosclerosis. The modern concepts of hypertension are presented succinctly and understandingly. The experimental work which the practitioner rarely has the opportunity to study and to digest is put forth clearly and reasonably comprehensively.

J. H. MUSSER, M. D.

The Lymphatic System, Its Part in Regulating Composition and Volume of Tissue Fluid: By Cecil K. Drinker. Stanford University, Cal. Stanford University Press, 1942. Pp. 101. Price, $2.25.

This small volume is a reprint of the Lane Medical Lectures given at Stanford University in 1941. In a delightful preface, Dr. Drinker suggests that his lectures are to be considered as a new sort of cruise in a ship built of experiments and ideas. He sets out to develop the reasons why mammals have lymphatics; why the lymphatic system has been slowly turned from a casually organized accessory of the blood circulation into a physiological entity, complementing the first system and joining with it in the task of keeping the composition and volume of the mammalian tissue fluid at a steady normal level.

There are five stimulating lectures. The first deals with the physiological principles displayed in the evolution of the mammalian circulation and includes a discussion of the methods of investigation, the essential features of relations of blood and lymph, and the development of the circulatory adjustments in lower animals. This is followed by a discussion of the establishment and characteristics of the capillary circulation. The third lecture describes the appearance and elaboration of lymphatic vessels. Some of the author's experiments

are described in the next lecture, particularly those concerned with the relationships of blood, tissue fluid and lymph as illustrated by experiments upon the heart and lungs. The final lecture emphasizes the relations of the lymphatic system to practical problems in surgery and medicine, wound healing and pneumonoconioses serving as respective examples of each.

The volume is replete with appropriate illustrations and much interesting historical material, as well as the author's philosophical considerations based on his many years of work in this field. The lectures are highly recommended as a supplement to the usual textbook discussions on the lymphatic system.

H. S. MAYERSON, Ph.D.

Neural Mechanisms in Poliomyelitis: By Howard A. Howe, M. D. and David Bodian, Ph. D., M. D. New York, The Commonwealth Fund, 1942. Pp. 234. Price, $3.50.

This volume is a quiet, scrupulously precise, critical survey of a series of experimental studies of poliomyelitis in animals, and in it are presented many indispensable, authentically attested facts.

Research is an inescapable obligation of medicine. Less than ten years ago pessimism prevailed among workers seeking knowledge of this disease. Since then advances have been made. A virus has been found in the stools of patients and contacts, and the disease-inducing agent has been recovered from sewage and from flies in epidemic areas. Emphasis is now being placed on the alimentary tract as the portal of entry in man.

Neural pathways are extremely intricate and apparently amazingly susceptible to the factors which induce poliomyelitis. Work has been done on the axonal transmission of the virus, and this gives some notion of its mode and rate of travel along neural structures. Neuron susceptibility to the virus seems to be related to a physiological state of the neurons. Inflammation is perhaps due to the products of the destroyed nerve cells rather than to the direct action of the virus itself.

While the above outlined advances in our knowledge of poliomyelitis have forced pessimism to give way to optimism, it is still felt that there is a lack of investigators who have had fundamental training in neuroanatomy or neurology, and it is believed that when such adequately equipped workers, possessed of accurate facts and original ideas, attack the problems of neurotropic virus diseases, they will unearth vast fields of new knowledge.

C. P. MAY, M. D.

Insulin; Its Chemistry and Physiology: By Hans F. Jensen. The Commonwealth Fund, 1938. Pp. 252. Price, $2.00.

This short but very thorough treatise on the chemistry and physiology of insulin deserves careful study by those interested in carbohydrate metabolism. The author has fulfilled his objective of adequately surveying the literature up to the year 1938. Since that time, substantial advances have been made in the knowledge about insulin. However, these omissions do not detract from the basic usefulness of the book.

The book is divided into seven brief chapters which are titled History of Insulin, Preparation of Insulin, Preparation and Chemistry of Crystalline Insulin, Standardization of Insulin, Administration of Insulin, Insulin Substitutes, and finally, Psysiological Actions of Insulin. Jensen does not subscribe to either of the current theories advanced to explain the symptoms of diabetes, viz. 1. the non-utilization theory which explains the lack of glucose utilization in the peripheral tissues by the lack of insulin, and 2. the over-production theory, which blames diabetic symptoms on the over-production of glucose in the liver from non-carbohydrate sources such as protein and fat.

Jensen postulates the following mechanism as a basis of carbohydrate metabolism: "Carbohydrate metabolism is the resultant of a well balanced interaction of various endocrine principles . . . The reactions governing carbohydrate metabolism take place in the various organs and tissues, the most important of which is the liver. The reactions are controlled, on the one hand, by insulin and, on the other, by those endocrine secretions (pituitary, adrenal, and thyroid) which are apparently antagonistic to the physiological action of the pancreatic hormone. Thus, impaired carbohydrate metabolism may not necessarily be an index of a dysfunction of the islands of Langerhans but may indicate a dysfunction of any one or more of the other glands mentioned."

ROBERT A. KATZ, M. D.

The Pathology of Trauma: By Alan Richards Moritz, M. D. Philadelphia. Lea & Febiger, 1942. Pp. 386. Price, $6.00.

For some time there has been a demand for a book which covers briefly and completely the pathological anatomy and histology of traumatic lesions and which gives complete details, but in a concise manner, the chief causes of such injuries and the disturbances they do or do not produce. The author has supplied this want. His definition of the various terms, such as "Mechanical Injury", "Reaction to Injury", "Abrasions", "Lacerations" and descriptions of various types of wounds are complete, leaving little argument for discussion. The various organs of the body, including both male and female, and the effect trauma may play on the possible causes of severe

injury or death, are discussed from both a negative and positive viewpoint.

The skeletomuscular system is considered in a complete manner. This book, "The Pathology of Trauma", should be of great service as a ready reference book for either the physician or lawyer who does medical legal work, and should in a short review clear up in their own minds many perplexing problems.

WILLIAM D. PHILLIPS, M. D.

The Eclipse of a Mind: By Alonzo Graves. New York, Medical Journal Press, 1942. Pp. 722. Price, $5.00.

Here is a voluminous case study of a manic-depressive psychosis, presented to psychiatrist and sociologist for what it may be worth in the furtherance of understanding and treatment of mental disease.

The material, edited and annotated by the attending physician, consists almost exclusively of the patient's own writing—an apparently uninhibited personal narrative whose value obtains both from the author's rather rare insight into his own mental states and processes, and from the fact that publication was an unconsidered factor in the writing.

Alonzo Graves, a man of high intelligence and a fluent and prolific writer, tells his own story, progressing from ancestral history, family characteristics, and involved personal reminiscence to the first aspects of his mental illness as discerned and admitted by him both in lucid intervals and disturbed states. During the last four of eight periods of hospitalization, his personal record supplements the routine institutional case history which is given, column against column, and provides an interesting parallel and check on the correlation of symptomatology with subjective processes.

The material is left free of any interpretations or attempts to influence the thought of the reader, who may draw his own conclusions. Footnotes were included at a later date by the patient himself during periods of remission, and are rational comments on, and explanations of, periods of irrational behavior or flight of ideas.

The chief justification for the publishing of this volume lies, perhaps, in this very quality of intensive self-revelation and investigation, particularly as regards hereditary and environmental factors. To quote from an included notation of Adolf Meyer: "Psychiatry is the description and analysis of diseases which take months and years for their evolution and which require careful records of conscientious and methodical observations. . . . We need less discussions of generalities and more records of life-times. . . ."

C. P. MAY, M. D.

Night of Flame: By Dyson Carter. New York. Reynal and Hitchcock, 1942. Pp. 337. Price, $2.50.

This is a novel about physicians, nurses and hospitals. The scene of the story is laid in a hospital and seems to have been written by some one who is well acquainted with the usual features of hospital life, but I doubt very much if any physician or nurse who reads this story would agree with the author in regard to the way the staff acts sexually. The principal and chief activity of this particular institution, which is described most accurately, appears not to be the care of the patient but rather the sex life of the different characters. In fact the first half of the book is about as sexy as a book could be and portrays a picture of hospital life which any one who has been in intimate contact with these institutions knows is not true. Possibly the author is motivated by the fact that the lay individual would probably be more interested in the intimate contacts between man and woman than life in a hospital, which is usually quiet, staid and replete with hard work. The latter part of the book, in fact the last third, describes the fire that destroyed the institution. This is thrilling and compelling and is really a remarkable description of a hypothetical fire in an institution filled with the sick and crippled. It is an excellent piece of descriptive writing.

The book is well written and if there was not so much material about the biologic reactions of almost every character in the book, it might be highly recommended. Certainly at the present time it cannot be commended as a book for any one but the most mature. The psychiatrist and the psychologist might be willing to psychoanalyze the characters with interest but to the immature the greatest appeal of the book would be its high sensuality.

J. H. MUSSER, M. D.

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